Strengthening Growth

Options and Constraints

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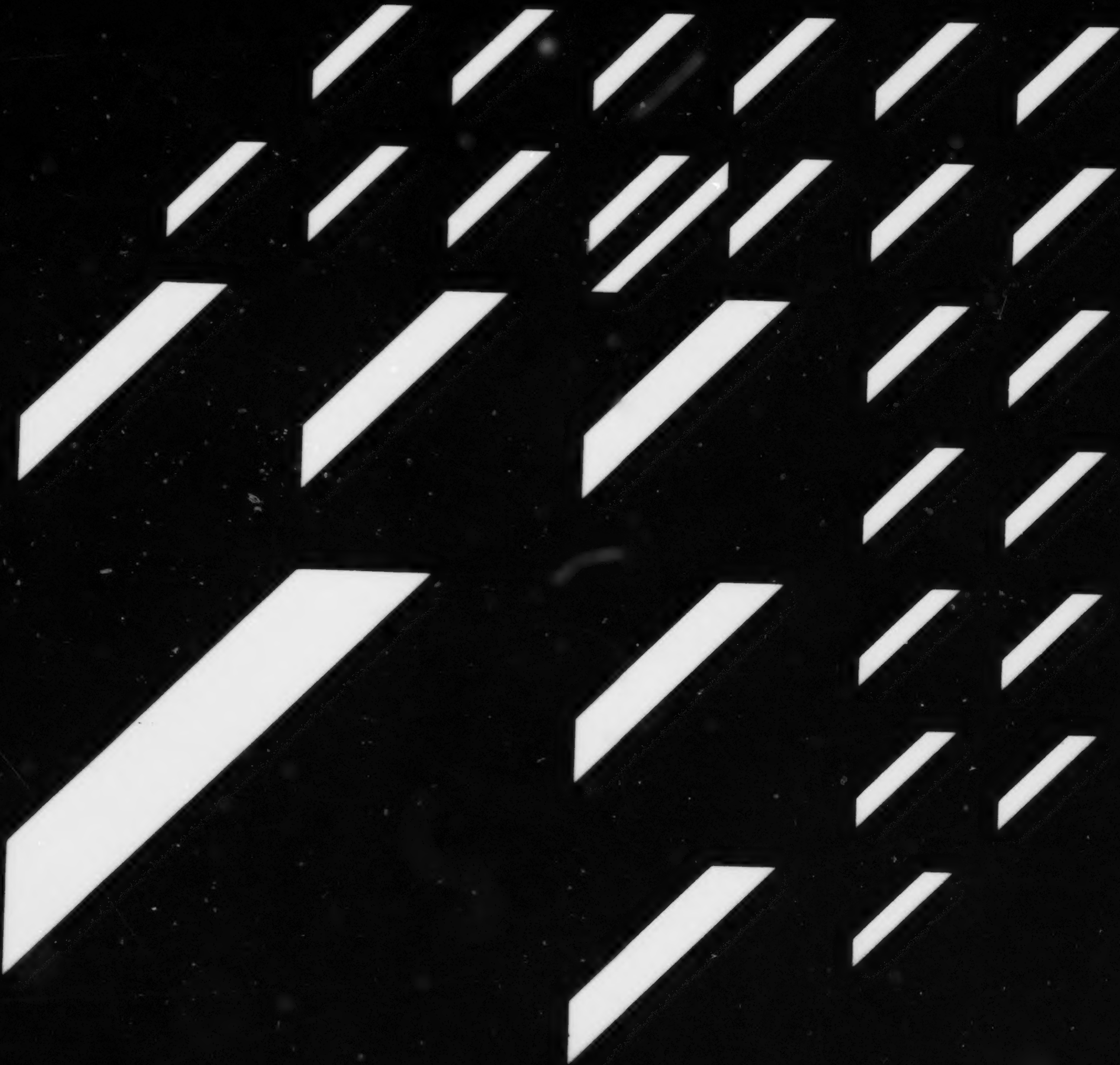

ERRATA

Page 109

— The last line in the first column should read:

"government *and* trade deficits."

— The seventh line of the second complete paragraph in the second column should read:

"true *of* short term rates"...

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Options and Constraints

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Twenty-Second Annual Review
1985

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This report reflects a consensus of the Members of the Economic Council of Canada. Mr. Fortin presents supplementary views at the end of Chapter 7.

Members of the Economic Council of Canada

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READER'S NOTE

The reader should note that various conventional symbols similar to those used by Statistics Canada have been used in the tables:

.. figures not available
... figures not appropriate or not applicable
- - amount too small to be expressed
- nil or zero
e estimated figures
x data confidential, to meet the secrecy requirements of the Statistics Act.

Details may not add up to totals because of rounding.

1 Introduction

Under the mandate of the Economic Council, an annual medium-term retrospective and prospective assessment of the Canadian economy is required. Among other things, this review encompasses employment, unemployment, inflation, output, and foreign trade. This year, the Twenty-Second Annual Review was completed and approved by the members of the Council at the end of August, and it reflects the data available and the policies in place at that time.

Since then, the Royal Commission on the Economic Union and Development Prospects for Canada (the Macdonald Commission) has published its report. Events did not provide enough time for the Council to reflect upon this enormously important piece of work in its Twenty-Second Review, but we did instruct the Council's chairman to position this Annual Review and other recent work of the Council in relationship to the Macdonald Commission's then-anticipated report. Thus the following remarks have been prepared by our chairman.

The Commission's mandate was broader than the mandate of the Economic Council, in that the Commission was instructed to consider legal, institutional, and constitutional issues, in addition to a broad range of economic issues. With respect to the latter, the Commission was instructed to examine not only the general economic trends with which the Council deals on a regular basis in its Annual Reviews, but also a wide range of issues of economic structure and process, which the Council considers in other reports, studies, and papers. Thus it is not surprising that the Commission's huge report (over 1,900 pages) deals with every issue that the Council has considered during the past five years or is currently considering as part of its ongoing research program. The economic portion of the Commission's report is somewhat like a compendium of all the Economic Council's Annual Reviews and reports of the last half-dozen years, presented at one time and place – and then some. The Commission's contribution is much greater than the presentation of a compendium, and it is valuable to have a very wide range of issues brought into focus at the same time and examined with the full power of the intellectual capital now available for their enlightenment.

The economic issues examined in the Commission's report include: the state of the economy, the global outlook for the economic environment, Canada's opportunities in an open world, external trade possibilities and policies, growth and employment, economic stabilization, natural resources and the environment, and human resources and social support. On economic issues alone, the Commission offers several scores of recommendations for future policy.

The Commission's report is a consensus report, with many of the same characteristics as the Council's consensus reports. It deals with medium- and long-term issues rather than short-term issues. Like the Council's reports, it is a report prepared by a group of citizens. It is motivated by broad considerations of public policy rather than those of particular scientific disciplines. It is an amalgam of the understanding, by that group of citizens, of research findings and of their perception of the priorities and processes of Canadians and their institutions. It is an attempt to help us, and in some respect, to lead us toward thinking and debating seriously the important economic, social, and political issues that affect our future.

Regarding economic issues, which comprise about two-thirds of the report, the Commission is moderately optimistic and reformist. For better or for worse in this matter of tone or mood, the Commission's general outlook and that of the Council, particularly in this Annual Review, are similar. It is a fair comment, also, to say that both the Commission as judged by its report and the Council as judged by its own recent reports, including this Review, believe that it is possible to pursue a set of social and economic policies that are consistent, generous, and mutually supporting. Both bodies indicate that substantial reforms in policies and programs are now needed in Canada; while differing in detail and degree, the proposals for reform are remarkable in their degree of similarity.

On several policy issues, the Commission's report has struck out more boldly and more systematically than the Council has in its recent reports. The Commission has proposed a massive change in the unemployment insurance and related programs to substitute job-training and job-creating activities for a substantial part of the income-replacement features of those programs. The Commission has proposed a comprehensive reworking of the income-supplement and income-support programs in Canada and of the related tax measures rather than a piecemeal and marginal adjustment to that system. Pointing in the same direction as the Council has in recent years, the

Commission has proposed that a major effort be undertaken to improve the innovation and diffusion of technology and the increase in productivity growth in Canada. On a subject that the Council has not considered recently, the Commission makes bold suggestions about the financing of postsecondary education and training of all kinds.

While the scope of the Commission's report is broader than that of any one of the Council's Annual Reviews or reports, it may be helpful to the reader of this Annual Review to relate its specific contents to the Macdonald Commission's work. In this Annual Review, the most important special theme concerns growth in productivity. The Commission's report devotes at least as much space to that subject as we do. Investment and interest rates are the other special themes of this Review; they too are discussed extensively in that report. Finally, both the Review and the report are preoccupied with ways to reduce unemployment on a sustained basis without a resurgence of inflation. These similarities between the two documents clearly indicate that there is a broad consensus in Canada about the fundamental economic issues in this country and about the general direction of desirable policy avenues to improve Canada's economic prospects.

2 The Medium-Term Outlook

The Canadian economy has made impressive gains in real terms over the past two years, which have also witnessed a slowing-down in inflation. Moreover, these gains were more broadly based in 1984 than in 1983. Last year, the economy grew at a rate of 5 per cent in real terms – the strongest performance since 1976 and more than 1.5 percentage points higher than the figure recorded in 1983. Inventory movements and consumer spending made a substantial contribution to the recovery in 1983, but in 1984 exports, which grew at a real rate of 19 per cent, also spurred both the recovery and the expansion of the economy. These gains were especially large in auto-related domestic and export markets. They were supported by a number of factors, including a substantial increase in real disposable income, a continued downward drift in the personal saving rate, a much stronger U.S. economy, and a Canadian/U.S. dollar exchange rate that gave Canadian exporters a competitive edge in the United States, especially against U.S. suppliers.

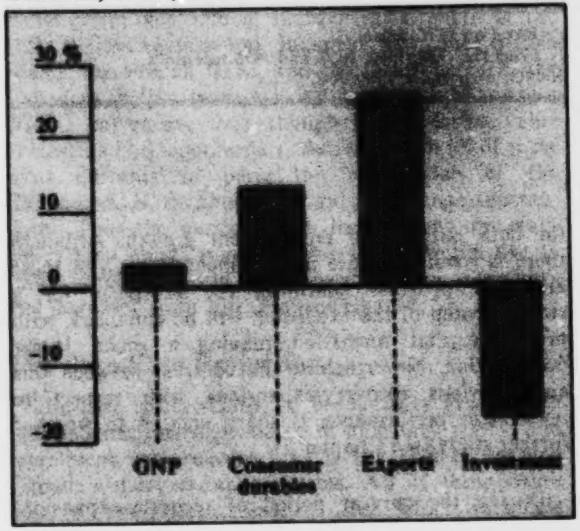
Some Key Issues

The big weakness in 1984 was the poor performance of business and residential capital formation. Although there was some improvement relative to 1982 and 1983, this did not occur until the second half of 1984, and the gain was not sufficient to contribute positively to economic expansion for the year as a whole. By contrast, growth in capital formation of about 20 per cent in real terms, which has been an ongoing part of the recovery-expansion in the United States, boosted U.S. real growth to nearly 7 per cent in 1984. Because no investment rebound of this magnitude has taken place in Canada, the ratio of investment spending to GNP remains very low – low in a historical sense, and substantially lower than the peak recorded in 1981 just prior to the 1982 downturn.

The same perspective is obtained by comparing 1984 levels with those of the previous peak, reached in 1981 (Chart 2-1 and Appendix Table A-1). For example, the level of real GNP in 1984 stood at 3.7 per cent above that recorded for 1981. The two factors that contributed the most to this result are consumer demand for durable goods (especially automobiles) and export demand, which were 13.7 and 25.1 per cent above their 1981 peaks, respectively. The impact of exports was particularly potent because during the same period, import growth was only a little more than one-third that of export growth. For capital formation, however, a comparison of 1984 with 1981 reveals a decline of about 17 per cent. This result is quite different from the performance of investment following the recessions of 1954, 1960, 1970, and 1975: during the phases of recovery-expansion that followed those periods of weakness, capital formation averaged about 20 per cent *above* the pre-recession peak (Chart 2-2 and Appendix Table A-2).

Chart 2-1

Change in Four Major Indicators,[1] Canada, 1984/1981

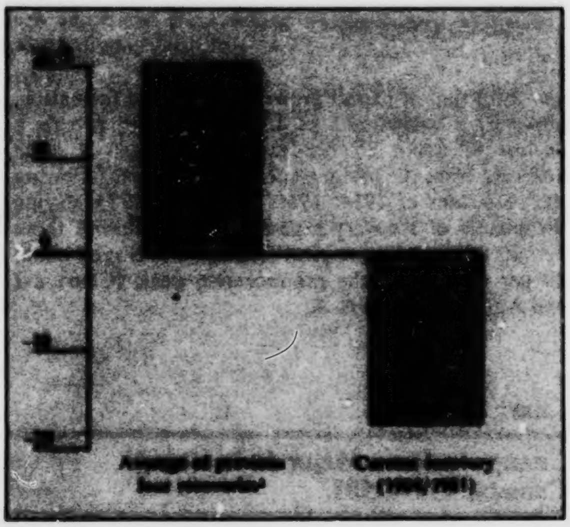


1 Based on 1971 dollars.
Source Appendix Table A-1.

There have been a number of positive signs in the more recent period, however. For example, the data from recent surveys of investment intentions indicate that both spending intentions and spending levels are on the increase.[1] This development reflects the recent rebound in profits, the continuing improvement in corporate balance sheets, and the increasing levels of capacity utilization, characterized by a firmer outlook

Chart 2-2

Real Investment Performance[1] During Recoveries, Canada



1 Based on 1971 dollars.
2 From the 1954, 1960, 1970, and 1975 recessions.
SOURCE Appendix Table A-2.

for both output and employment growth. Although there is room for more improvement in each of these areas, if progress continues the prospects for a strengthening of the expansion will be enhanced, with private capital formation making a much larger contribution. Nevertheless, the contrast between this and previous recovery-expansions with respect to investment performance is sharp enough to warrant further study (see Chapter 6).

During the current period of recovery-expansion, there has been solid progress in reducing the rate of growth of both prices and wages. On the price side, weak international commodity prices (including world oil prices), rising but low levels of capacity utilization, and what appears to be the beginning of a recovery in the rate of growth of productivity contributed to a decline in the rate of growth of the consumer price index from 5.8 per cent in 1983 to 4.3 per cent in 1984 – the lowest rate of increase in about 15 years. This improvement is even more impressive when the GNP deflator is used for analysis: the 1984 inflation rate then drops below 3 per cent. On the wage side, several factors contributed to reducing the growth of nominal wages, including wage restraint in the public sector, slack labour markets, and a general realignment of expectations consistent with the growth potential of the economy. The net result of these and other factors has been wage settlements that, for the economy as a whole, have averaged 3 to 4 per cent – the smallest increases since 1967.

Even though the pace of price and wage increases has adjusted to a more realistic level, some imbalances have continued. For example, for the *seventh consecutive year* the growth of wages has failed to keep pace with the rise in the cost of living. By any measure – real income per capita, real wages, or real disposable income per capita – this means that growth in living standards remains an area of concern. In fact, living standards and their underlying foundation – productivity – have been stagnant since the mid-1970s (Table 2-1). Only recently has growth in labour productivity begun to show signs of improvement. In 1984 productivity increased by about 2.3 per cent, after an increase of 1.9 per cent the previous year. If this continues, real wages, and thus living standards, should soon follow suit. But, with the previous lengthy drought in productivity growth still fresh in our memories, it may be too early to view the experience of the last two years as the beginning of a new long-term trend.

Table 2-1

Indices of Major Economic Indicators, Canada, 1981 and 1984

	1981	1984
	(1976 = 100)	
Growth in unit labour costs	114.4	9.6
Inflation rate	166.7	57.3
Output per person employed	98.0	101.7
Short-term interest rate	199.6	122.0
GNP (1971 $)	113.8	118.0
Real disposable income per capita	106.4	103.8
Employment	116.1	116.0
Unemployment rate	105.6	159.2
Saving rate	152.7	141.9
Investment (as % of GNP)	102.9	79.4
Federal deficit (as % of GNP)	122.2	388.9
Federal debt (as % of GNP)	121.3	174.9

SOURCE Based on data from Statistics Canada and from the Bank of Canada.

A sustained recovery in productivity growth is the key to improvement in many other areas, including inflation control and deficit reduction (through growth of the tax base). High growth in productivity is not a panacea, as it does not, in itself, solve issues of income distribution between regions and between productive factors, as well as over time. But understanding the core issues and explanations related to the flatness of productivity growth during the second half of the 1970s is fundamental to the determination of public policy (see Chapters 3 and 4).

As the 1970s progressed, central banks (including the Bank of Canada) actively sought to re-establish price stability, in addition to managing domestic credit conditions and acting as government financial agents. These traditional roles were played out in a world in which trade was expanding rapidly, the international movement of financial and real capital was growing by leaps and bounds, and the need for financial markets to match borrowers with lenders was taking on new dimensions. Among other things, substantial quantities of petrodollars needed recycling, the borrowing requirements of the less developed countries exploded, exchange markets for national currencies increased in volatility, and the industrial countries experienced new financial needs as deficits persisted long after the 1981-82 downturn had run its course.

Additional tensions arose in international financial markets when, in late 1981, the development plans of many countries were stalled by the weakening of world oil prices and the rise in real (inflation-adjusted) interest rates, leaving many poorer countries with insufficient means to service their high cost debt. A number of these issues were examined in our Twenty-First Annual Review, published last year.[2] Some appear less urgent now, but the overhang of high real rates and, more generally, the constraint put on the Bank of Canada by the increased integration of international financial markets, especially in North America, have, in the recent past, left the Bank with few alternatives but to follow U.S. interest rates, while maintaining order in the market for foreign exchange. Many have argued that this has cramped the force of the Canadian recovery and could continue to do so in the medium run.

The Canadian experience during the current recovery-expansion period serves to illustrate these issues. For example, although the inflation rate in Canada is now in a range around 4 per cent, nominal interest rates – especially long-term bond rates – remain in the double-digit range. What has emerged in the period 1982-85 has been a stubbornly above-average real rate of interest, which has recently settled in a range around 6 per cent – about 3 to 4 percentage points higher than the historical average. This high real rate is likely to restrain the pace of investment expansion in Canada. Because of the effect it has on government deficits via borrowing costs and because of the slow growth of the tax base resulting from weak medium-term performance, this situation could lead to ineffectiveness in the use of economic stabilization policy, as the cost of servicing the mounting debt leaves less room for the federal government to change discretionary programs as circumstances require.

The advantages and pitfalls of following an independent monetary policy are now at the core of the debate on stabilization policy. Some suggest that financial assets denominated in Canadian and U.S. dollars are such close substitutes and that U.S.-Canada trade is so highly integrated that independence in the conduct of monetary policy is all but impossible for Canada. Given the state of world currency markets in 1983 and 1984, this viewpoint is not difficult to accept. For example, as a result of the strong growth performance and high real interest rates in the United States, as well as the perceived favourable investment climate in that country, the Canadian dollar periodically came under intense pressure, leaving the Bank of Canada with hard choices as to the degree of independence to be followed when setting domestic interest rates. The net effect of the Bank's choices during the recent period was some nominal increase in the Canadian-dollar value of the U.S. dollar and some upward pressure on real rates of interest in this country. Because of the unique nature of the Canadian and U.S. currency markets and of the general strength of the U.S. dollar against the Japanese yen, the British pound, the French franc, and the Deutschemark, the Canadian dollar gained value against other major OECD currencies, even though it was losing value against its U.S. counterpart. But even with all of these cross currents in play, the real value of the Canadian/U.S. exchange rate did not change substantially. Thus the pursuit of an independent monetary policy for Canada is not as easy as one would like to think, in today's world of international capital mobility and increased trade linkages (see Chapter 5).

The Base Case Projection

The core issues related to productivity growth, the international interdependence of monetary policy, and investment performance play a key role in shaping Canada's medium-run prospects. All of these issues deserve more detailed analysis. But before we tackle them, it would be useful to form a view of the economic setting that we anticipate in the medium run. Forming a judgment about future economic prospects is an uncertain exercise, but if improvement over the current situation is the objective, then judgments about the future, however imperfect, must be made. The base case illustrates the path of the Canadian economy to 1995. Its foundations rest on previous trends and cyclical experience, estimated historical relationships between key variables, judgments about the economic prospects for our major trading partners, the outlook for energy and nonenergy commodity prices, and the current and future path of domestic fiscal and monetary policy.

The medium-term outlook suggests that continued monetary and fiscal restraint in both the United States and Canada, weak commodity prices, some slack in the markets for both goods and labour, and government wage restraint will foster economic growth of about 3.5 per cent in Canada, produce an outlook for inflation below 4 per cent, and reduce the unemployment rate from just below 11 per cent in 1985 to about 7.5 per cent by the mid-1990s (Table 2-2). However, the near-term outlook for jobs, the medium-run performance of investment, and the continued imbalance between government spending and revenues – although we recognize that the measures taken by the federal government in its May 1985 Budget have made substantial headway in reducing its deficit – are still areas of concern, as is the real rate of interest.

During the period 1985-90 we expect real growth to average a little more than 3.5 per cent; in two of those years it will be about 3.9 per cent. For the period 1991-95 we anticipate that average real growth will remain in the same range. The base case projection does not anticipate the occurrence of a serious recession.

The inflation rate during the period 1985-90 is expected to average 3.9 per cent. For the period 1991-95 price increases are expected to remain below 4 per cent, although some upward pressure is expected if rates of capacity utilization increase and labour markets tighten. Other factors that will influence this outcome include low inflation expectations resulting from continued monetary restraint, improved productivity performance, and stable energy and nonenergy material prices.

The medium-term outlook for labour markets is favourable. Employment growth is anticipated to be about 2.3 per cent for the period 1985-90 but below 2 per cent during the subsequent five-year period. Diverse factors, such as some recovery in the rate of growth of productivity and a continued upward trend in the participation rate of women, will combine with

Table 2-2

Selected Economic Indicators, Base Case Projection, Canada, 1985-95

							Average	
	1985	1986	1987	1988	1989	1990	1985-90	1991-95
	(Per cent)							
Change in:								
Gross national product (1971 $)	3.8	3.5	4.0	3.8	3.4	2.8	3.5	3.5
Consumer price index	4.0	3.7	4.0	3.7	3.9	4.3	3.9	3.4
Labour force	2.1	1.8	1.8	1.6	1.3	1.6	1.7	1.4
Employment	2.9	2.4	2.8	2.2	1.8	1.7	2.3	1.7
Productivity (output per person-hour)	1.0	1.7	1.7	2.2	2.2	1.9	1.8	2.5
Real wage rate	0.9	1.6	2.0	3.4	2.9	2.2	2.1	3.0
Nominal wage rate	4.9	5.4	5.0	6.6	4.6	4.7	6.2	6.5
Level of:								
Unemployment rate	10.6	10.1	9.2	8.7	8.2	8.1	9.2	7.6
Saving rate[1]	12.9	12.1	11.7	11.7	11.0	10.7	11.7	9.2
Participation rate[2]	65.2	65.7	66.3	66.7	67.1	67.6	66.4	68.6
As a proportion of GNP:								
Real investment	19.5	19.9	20.1	20.6	20.9	21.2	20.4	20.6
Government surplus or deficit (–)								
Federal	–6.4	–5.1	–4.7	–4.3	–4.1	–4.0	–4.8	–2.4
Provincial	–0.1	–0.2	–0.1	–0.1	–0.2	–0.3	–0.2	–0.2
Balance of international payments								
Current account	0.4	0.6	1.0	1.0	1.1	0.6	0.8	1.6
Energy	2.1	2.1	2.4	2.4	2.5	2.4	2.3	1.6
Nonenergy	–1.7	–1.5	–1.4	–1.4	–1.4	–1.8	–1.6	—

1 Personal saving as proportion of personal disposable income.
2 Labour force as a proportion of the population aged 15 and over.
SOURCE Economic Council of Canada, CANDIDE Model 3.0, July 1985.

steady growth in output to produce a gradual reduction in the unemployment rate. Under the current policy regime, however, we anticipate double-digit unemployment until late 1986. Nevertheless, sustained real output growth of about half a percentage point higher than potential growth during the period 1985-95 could bring the rate of unemployment down to below 8 per cent during the period 1991-95.

An environment postulating no shocks, stable prices, and sustained real growth during the period 1985-95 produces growth in real wages and labour productivity that ranges between 2 and 2.5 per cent. This is the most prolonged period of stable gains for indicators such as these since the 1960s, although the magnitude of the anticipated gains is substantially less than that recorded during that earlier period. Unanticipated shocks, a resurgence of inflation, and/or periods of recession could dissipate these gains.

A worrisome aspect of the medium-run outlook is the weakness of investment spending. During the period 1985-95 it remains in a range between 19.5 and 21 per cent of GNP. That is below the average for the period 1960-81 by about 1.5 to 2 percentage points. Monetary restraint characterized by above-average real rates of interest in both the U.S. and Canadian money markets certainly could contribute to a lower-than-average performance during the early part of this period, as well as to low levels of business and consumer confidence.

The federal deficit as a proportion of GNP is expected to fall during the next five years from a high near 7 per cent in 1984-85 to about 4 per cent in 1990. A narrowing of the gap between potential growth and actual performance during the period 1991-95 will further reduce this ratio to about 2 per cent of GNP. Factors that could put upward pressure on this ratio include high borrowing costs and poor performance on the real side of the economy, which would lead to increased income-maintenance payments and a weakened tax base. The factors expected to help improve the federal deficit include the measures introduced in the May 1985 Budget and the expectation that there will be no cyclical downturn or recession during the projection period.

Although Canada's balance of international payments will remain within 1 per cent of GNP, trade will play an increasingly important role in the overall economy during the late 1980s and early 1990s. Among other things, we anticipate that positive net energy exports will offset a negative nonenergy trade balance during this period. The favourable growth prospects are due to a sustained expansion of the U.S. economy – free of major downturns and subject to only one year (1990) of slow growth during the period 1985-95 – and to a favourable real exchange rate.

The External Environment

For the United States, 1984 was a year of strong real economic growth, moderate gains in the areas of inflation and productivity, extraordinary strength in investment, and a continued downward trend in the unemployment rate. Results like these had not been part of the U.S. economic scene for four decades. One must go back as far as the early 1950s to find comparable periods of real growth and at least as far back as the late 1960s to find comparable periods of price stability and productivity gains.

The similarities with past periods of economic history begin to fade, however, when one takes a closer look at foreign exchange markets, real interest rate performance, and the composition of savings. More dependence on foreign savings, a high-flying dollar, proportionally larger federal deficits, and above-average real interest rates are unique features of the U.S. economic recovery since 1980-82, and – despite all the good news about real growth and inflation – they remain as future areas of concern. What transpires here will certainly influence the course of world financial markets and trade in goods and services. The resolution of these problems, particularly in the trade area, could be injurious to Canada, as the current protectionist tendencies of the U.S. Congress could reduce Canadian access to U.S. markets at a time when trade expansion for Canada could bring substantial benefit in terms of productivity gains.

In 1984 the U.S. economy achieved a real growth rate close to 7 per cent, with much of the strength coming from investment. Although this strength diminished in late 1984 and in the first quarter of 1985, the present outlook for the U.S. economy does not anticipate that this weakness will develop into a serious downturn or recession in late 1985 or early 1986 (Appendix Table A-3). The possibility of a recession in the United States seems unlikely, as the easing of inflationary pressures and the reduction of real growth rates to a range near or just below potential have enabled the Federal Reserve Board to ease monetary policy and permit some downward trend in interest rates. The period beyond 1985-86 is one in which a downturn, although possible, is remote; therefore, we have excluded that possibility from our base case assumptions and reserved it for consideration as one of several uncertain areas. Real growth is anticipated to be above 2.5 per cent in 1985.

During the period 1986-95 we anticipate real growth to average about 2.7 per cent in the United States. A maturing of the expansion will bring some upward pressure on prices. This gradual rise, averaging about 4.6 per cent, combined with monetary restraint, will result in upward pressure on interest rates in the medium run. We do, however, anticipate some change for the better with respect to the current high real rates, as pressures from the large U.S. federal deficit are expected to abate when agreement on a deficit-reduction package and its subsequent implementation bring long-term improvement to the fiscal position of the U.S. government.

Since both the Senate and the House of Representatives have passed a deficit resolution, the outlook for the U.S. fiscal position has improved. The Reagan Administration's compromise on defence spending, resulting in a large reduction in growth for this item, has contributed substantially to this improved position. For example, growth in real defence purchases is now expected to average close to 3 per cent a year over the next ten years – about half the rate thought to be more likely only six months ago. We also assume that no new tax increase will be enacted until after the 1988 presidential election; we anticipate a personal tax increase of about 7 per cent shortly after the election, giving further support to our expectation of favourable medium-run movement in the U.S. fiscal position. Furthermore, lower nominal (and thus real) rates also contribute to reduced debt-servicing costs. Other cost-cutting measures included in the assumed deficit-reduction package hold the growth of real federal expenditures on goods and services to just over 2.7 per cent per year. The net result is a medium-run outlook for the U.S. federal deficit of around $175 billion – or about 3 per cent of GNP, given the anticipated deficit-reduction activity. This is down about 2 percentage points from an outcome that provides for no change in fiscal policy. Moreover, this outlook for the United States does not include any of the tax reform measures currently under debate. Tax reform could also have an effect on the U.S. fiscal position – an effect not yet introduced into our assumptions. The proposals in this area are still in an early stage of development, with no clear-cut consensus in view.

Despite the financial needs of the U.S. government, the growth in U.S. business investment is anticipated to average about 4 per cent in the medium run. This favourable performance follows the result for 1984, which stands as the largest single increment in business investment to occur in any year since 1946. Several factors contributed to this outcome, including favourable tax treatment and the recent emphasis on productivity and on improved distribution facilities, especially in industries heavily dependent on equipment (transportation and manufacturing, for example). During the period 1975-85 growth in productivity averaged about 0.8 per cent annually. During the period 1985-95 annual productivity growth is expected to average close to 1.4 per cent, with substantial gains originating in the manufacturing sector.

The most uncertain aspect of the medium-run outlook for the United States is that for the balance of payments and the dollar. It has become increasingly evident that the twin deficits, the extraordinary investment performance, the above-average real interest rates, and the strength of the dollar are part and parcel of the monetary and fiscal regime that has evolved in the United States during the period 1980-85. The demand for assets denominated in U.S. dollars since the weakening of world oil prices in the early 1980s has meshed well with the regime in force during that period. One crucial feature in our assessment of the outlook is that the long "bull" market for the U.S. dollar that began at the turn of the decade has now run its course. We anticipate that future currency realignments will bring a reduction in the value of the U.S. dollar – a development that may already be under way. Adjustment is expected to take place slowly, as the real growth and inflation rates of its trading partners converge with those of the United States. The anticipated gradual decline of about 21 per cent in the value of the dollar in the medium run is the basis for improvement in the U.S. balance of payments, with other factors also contributing, including the partial revival of productivity, mentioned previously. For Canada, these prospects could be unfavourable, as short-run action of a protectionist nature by the U.S. Congress and long-run U.S. dollar depreciation could erode the recent gains in Canadian competitiveness and place Canada in a less advantageous position in U.S. markets.

The prospects for the United States anticipate stable growth in the other OECD countries, the majority of which are also important trading partners of Canada. Industrial production in these countries is expected to average about 4.6 per cent a year during the period 1985-95. Individual performances will vary according to circumstances in the various countries. For example, growth in France and the United Kingdom is anticipated to be on the low side of 4.6 per cent, and that in Japan on the high side. Inflation is expected to remain moderate. We expect growth in import and export prices to remain weak, with the real prices of many commodities declining during much of the period. Continuing weakness in energy prices will be a factor. For real oil prices we expect declines until 1988, and stabilization thereafter. As is already apparent, a highly competitive trading environment will persist, and at the same time protectionism and efforts to secure greater market access will remain part of the trade debate. The details of our outlook call for a gradual reduction of these tendencies, with market forces dominating in the medium run. If market forces do not dominate and protectionism becomes the rule, the result could be harmful to Canada.

Energy Supply, Demand, and Prices

In view of the continued excess capacity in crude oil, world oil prices are expected to fall to $27 (U.S.) per barrel before the end of 1985 and to remain at that level until the end of 1987. They will then resume a pattern of nominal growth that will not, however, lead to any real increase for the remainder of the projection period. This pricing outlook for crude oil is in accord with the consensus view. Given this background, we have set the domestic wellhead price for conventional "old" oil at $29.75 (Can.) per barrel until the end of May 1985, as indicated in the June 1983 amendment to the energy agreement between the federal government and the province of Alberta.[3] On 1 June 1985, the terms of the Western Accord came into effect.[4] As of that date the wellhead price for all types of oil production rose to world levels. Thus in 1986 the wellhead price and the international price at Montreal, less transportation costs, will be one and the same (Appendix Table A-4). The Western Accord eliminated the differential system of oil pricing that had been in effect since the National Energy Program was introduced in 1980. Since 1 June 1985, all types of oil production, whether new or old, receive the world price at the wellhead.

The domestic price, or the price that consumers pay, differs somewhat from the international price during the projection period. The pre-Accord domestic price to consumers exceeded the price paid to producers of old oil by the sum of the Canadian ownership charge of $1.15 per barrel, the petroleum compensation charge (financing the subsidy paid on imported oil as well as the subsidy paid to new oil producers – the petroleum compensation fund), and transportation charges. With the Accord in place, the price to consumers should only reflect movements in the international price. In the May 1985 Budget, however, an additional federal excise tax of 2 cents per litre was levied on motive fuel. In June 1985 this tax was increased by an additional 1 cent per litre, effective January 1987. We have included this tax in our domestic price projections, limiting its impact to motive fuels only. Thus the domestic price to consumers is actually higher than the international price. Furthermore, any deficit in the petroleum compensation fund remaining on 1 June 1985 is assumed to have been absorbed by the federal government.

The price outlook for natural gas producers grows increasingly bleak. In the June 1983 amendment, the intent was to maintain gas prices at a 65 per cent BTU equivalent to the price of oil. Because of the continued weakness of international prices, it was necessary to eliminate the natural gas and gas liquids tax after 1984 in order to enable this target to be met. With the announcement of the Western Accord, the intention was to come to an agreement regarding natural gas pricing by 1 November 1985. In the interim the wellhead price of natural gas is frozen at the March 1985 level. The natural gas price to consumers in the base case no longer includes the Canadian ownership charge, which was eliminated as of 1 June 1985. In view of the world price outlook and the recent moves towards negotiated competitive export pricing, the price for natural gas exports averages close to $3.20 (U.S.) per gigajoule for the period 1985-87. We also anticipate additional increments to gas exporters as international prices experience some nominal gains during the remainder of the period.

We have adopted a supply-and-demand outlook for crude oil and natural gas that is consistent with the National Energy Board projections released in the fall of 1984.[5] The NEB supply outlook was developed before the Western Accord came into effect in the spring of 1985, and it excludes any additional production resulting from the incentives incorporated into the agreement. With steadily declining oil supplies from conventional sources, any shortfall is expected to be supplemented as follows. Enhanced recovery techniques will yield additional capacity from conventional old oil, while the Syncrude expansion is expected to add capacity by 1988. Activity at the Cold Lake plant, while undertaken in small increments, could culminate, when complete, in a major *in situ* production facility. The recently confirmed undertaking of the Canstar oilsands plant is expected to yield production by 1992, reaching "one-train" capacity (70,000 barrels a day) a year later. The investment spending required to complete these projects will have an impact on general economic activity during the period encompassing the turn of the decade. With the Atlantic Accord[6] in place and the extensive incentives offered, we also anticipate additional oil to come on stream from the offshore fields. Production from Hibernia is assumed to begin in 1989, with other offshore reserves yielding only marginal production by the end of the projection period.

In line with the NEB projections, we anticipate that total demand for domestic crude petroleum will gradually increase after the turn of the decade. Until then, we expect demand to decline by less than 0.5 per cent a year, on average. Other energy forms, particularly natural gas, will fill the gap. The overall demand for natural gas is expected to increase by close to 2.5 per cent during the period, with consumer demand growing at a somewhat faster pace.

The demand and supply profiles indicate some stability in oil imports in the near term, followed by an increase at the end of the decade. By the mid-1990s, when additional supplies are anticipated, imports will gradually decline to lower levels. We assume that crude oil exports will decline to some extent from their present high levels; but given the expected continued

The Phasing of Large-Scale Energy Investment Projects, Base Case Projection, Canada, 1981-94

	Phase-in year	Peak period	Phase-out year
Oil sands			
Syncrude expansion	1984	1988-92	1993
Petro Canada "Canstar"	1987	1989-93	1994
Cold Lake[1]	...	...	...
Alsands[2]	...	...	...
Pipelines			
Trans Quebec-Maritime pipeline, plus laterals	1981	1982-84	1987
Alaska Highway gas pipeline	1988	1989-93	1994
East Coast gas pipeline	1989	1990-91	1992
Hibernia oil project	1986	1987-88	1989

1 The Esso Resources project at Cold Lake and BP Petro Canada *in situ* expansion project at Wolf Lake are included in our exploration and development assumptions but are not singled out here.

2 The cancelled Alsands project has been excluded from the energy assumptions.

production of heavy oil, along with the considerable deregulation of licensing, we expect this decline to level off later in the decade. Natural gas exports are expected to reach the authorized volumes towards the end of the 1980s and then to decline gradually, in view of the expected reduction in availability of supplies. The resolution of present contractual difficulties is expected to remove any remaining obstacle delaying exports to Japan; beginning in 1988, they are expected to increase, reaching over 160 petajoules per year by 1992.

Our investment assumptions reflect the recent incentives provided in the Western Accord, which are designed as substitutes for many of those previously in place. We have also included the recent Alberta royalty-remission measures announced subsequent to the Accord. The "off-oil" incentives offered to domestic and industrial consumers through various programs will continue to result in activity designed to achieve a reduction in oil demand. At the same time, the phased cessation of several of these programs – the CHIP and COSP programs, among others – has been included in our assumptions. In view of the growing need for an expanded hydroelectric distribution system and of the continued strength of electricity exports, we have provided for a gradual return to annual real growth of 2 per cent in public utilities investment.

In addition to the oilsands developments, we have provided for the eventual completion of the Alaska Highway gas pipeline, anticipating large-scale construction to begin in 1988 and to peak during the period 1989-93. This assumes an amicable disposition of the present debate between Canada and the United States concerning the future of this pipeline. The completion of the Trans Quebec-Maritime pipeline and the extension of laterals to service new areas will spur increased conversion activity during the remainder of the decade.

Domestic Fiscal and Monetary Policy

Existing legislation, as included in past budgets (including the May 1985 Budget) and energy agreements (including the Western and Atlantic Accords), has been followed in our fiscal and monetary policy assumptions. All personal, corporate, and indirect taxation (energy and nonenergy) measures have been incorporated into these assumptions. The surcharge on personal income is assumed to expire at the end of 1987, as is the surcharge on corporate profits. Federal spending restraint measures are also incorporated. We also account for the items included in provincial budgets in place as of June 1985.

Public-sector wages have been constrained to increase at the same rate as the consumer price index, and other major government prices have been assumed to increase at 4 per cent annually during the period. We have assumed continued restraint in government purchases of goods and services, in varying degrees for each level of government. For example, real federal defence spending is assumed to increase by 2.5 per cent annually, while nondefence spending rises by only 0.4 per cent a year. Provincial hiring is constrained to increase at 1.5 per cent per year, and other provincial spending on goods and services is assumed to grow at 3.5 per cent annually. Municipal and local government purchases are anticipated to increase at 0.6 per cent per year, while growth in overall municipal spending for personnel in primary and secondary education is

Domestic Policy Assumptions in the Base Case

Energy pricing — Crude petroleum and natural gas pricing schedules include the 1985 Western Accord and subsequent measures as per the May 1985 Budget and the June amendment. Prior to the timing set out in the Accord, the energy-pricing schedules applying since 1981 are in effect. Subsequent to the Accord, those policies are replaced by Accord measures in the case of oil and gas pricing.

Tax policy — All May 1985 Budget tax schedules (personal, corporate, and indirect) are incorporated as of June 1985. Previous schedules incorporating the National Energy Program, the 1981 energy agreements, the NEP Upgrade, and the June 1983 energy agreement amendment are replaced by the Western Accord measures as per the schedule set out in the Accord. Thus the petroleum compensation charge, the Canadian ownership charge, the incremental oil revenue tax, the natural gas and gas liquids tax on domestic production, and the petroleum and gas revenue tax are phased out as per Accord scheduling. All provincial budgets as of June 1985 are incorporated.

Expenditure policy — Government spending on goods and services is restrained, with annual increases in real expenditures averaging as follows: federal government - nondefence, 0.4 per cent, and defence, 2.5 per cent; provincial governments - wages and salaries, 1.5 per cent, and other spending, 3.5 per cent. Government wages are indexed to increase in line with the CPI. Major government prices are set at 4 per cent per annum. Transfer payments are indexed as legislated. Established Programs Financing and fiscal arrangements reflect budget changes and the five-province standard for equalization payments. Federal spending associated with capital assistance and subsidies reflects existing government policy.

Monetary policy — Canadian interest rates are in line with U.S. rates. The money supply is accommodating, with temporary downward movements in velocity accounted for.

expected to decline by close to 1 percentage point each year.

These factors combine to produce a decline in the federal deficit to half its current value as a proportion of GNP during the five-year period following 1985. This result depends directly on the tax-increase and expenditure-reduction initiatives included in the May 1985 Budget. Furthermore, we do not anticipate any major international crisis bringing serious pressures to bear on financial markets or exchange rates. We anticipate that the Bank of Canada will continue its present policy of containing interest rate increases and maintaining stability in the market for foreign exchange without risking gains already made on the inflation front.

Uncertainties

Although the assumptions and outcome of the base case represent our best judgment, a number of uncertainties remain in key areas. For example, the outlook for inflation, the pace of recovery in business investment, the progress of the deficit reduction program introduced in the May 1985 Budget, the prospects for strengthening the market for Canadian exports, the outlook for real interest rates and the U.S. dollar, and more generally the economic prospects of our major trading partners are all areas that contain a degree of uncertainty. Illustrating the effects that changes in these key areas might have on general economic conditions is a useful way of placing them in proper perspective.

Will Inflation Be a Medium-Run Problem?

The sharp increase in energy and nonenergy commodity prices, the expansion of monetary and fiscal policy in the late 1960s and early 1970s, and the post-1973 slowdown in productivity growth came hand-in-hand, during the later period, with an increase in the inflation rate in many industrialized countries. The acceleration of prices and wages resulted in a dangerous spiral that seriously undermined consumer and investor confidence in the world economic and financial system. Many remedies were tried in efforts to stop inflation. For example, during the mid-1970s Canada introduced a formal system of price and wage controls. Central bankers also made their contribution to the inflation fight. Both the U.S. Federal Reserve Board and the Bank of Canada gradually tightened their control over money supply growth, moving towards a tight money policy by the end of the 1970s. A continuation of this policy after the second oil price shock resulted in a sharp increase in interest rates. The record high nominal and real interest rates in turn contributed to the worst recession in 40 years, which pushed unemployment rates to very high levels. The aftershocks of the 1981-82 downturn – particularly in the form of high unemployment – are still being felt in Canada. The same holds true for many of Canada's trading partners, especially in Europe.

The severity of the 1981-82 downturn, the slack in the market for goods and labour, the induced changes to the demand for oil and other raw materials, and the announced program of government wage restraint contributed to the decline in the rate of growth of prices that appeared soon after the trough of the downturn. One long-lasting result has been a "virtuous" circle of both lower price increases and lower wage growth. Thus lower inflationary expectations, weak oil and nonoil commodity markets, high unemployment rates, the more recent partial restoration of productivity growth, and government wage restraint are all likely to spell a relatively low rate of inflation in the medium term, provided that monetary growth is kept moderate and no supply-side shocks occur in raw-materials markets.

In view of the continued weakness in oil and nonoil commodity market prices and of the acute revenue needs of the oil-producing nations, there is little likelihood that another supply-side shock will rekindle inflationary expectations and depress the real side of the economy. In these circumstances, the dominant factor that underlies inflation prospects in the medium run is the outlook for growth in nominal wages. The anticipated increase in wages in the base case is reasonable when high unemployment rates in Canada are taken into account (Appendix Table A-5). Nevertheless, an improved profit picture and the slow but gradual tightening of labour markets could result in some upward pressure. On the other hand, continued monetary restraint, supplemented by wage restraint in the public sector, could result in a reduction in inflationary expectations, and thus in wage and price increases, below that recorded for the base case. In any event, the risks on the inflation front are small unless monetary growth diverges substantially from the path assumed in the base case.

To quantify the impact of these possibilities, we have developed two cases. In the first case, inflation expectations are assumed to average 0.5 percentage points below base case values over the projection period. (Appendix Table A-6); in the second case, they are assumed to be 0.5 points above the base case figures. Using these two alternatives, we can calibrate the relationship between the expectations of inflation in the wage-bargaining process and measured inflation, as a wage/price spiral unfolds. This enables us to establish a rule of thumb relating the impact that the expectational element in wage bargaining can have on the rate of growth of prices.

Lower inflation expectations (a reduction of 0.5 percentage points) through a virtuous cycle reduce the general inflation rate (consumer price index) from 3.6 to 2.8 per cent during the projection period (a reduction of about 1 point). Lower inflation in turn increases output and employment via the real-income route and improves productivity via the real-output route; because the tax base strengthens, the ratio of the federal deficit to GNP also shows improvement. In addition, reduced inflation enhances Canada's competitive position in world markets. In contrast, higher inflation expectations produce a vicious circle of lower output and employment, poorer productivity performance, higher inflation, and larger budget deficits. Furthermore, the effect on wage and price formation is about double the original change in expectations. Thus an upward movement in inflation expectations by only 2 percentage points could add as much as 4 points to the rate of growth of prices in the base case.

The Investment Picture

Despite two years of strong economic growth, the recovery in business capital formation to date has been weak. As a matter of fact, the ratio of investment to GNP in 1984 was the lowest since the late 1940s. Since a solid recovery in investment is crucial for the expansion of Canadian productive potential, recent investment performance is a matter of concern.

This poor performance can be attributed to an unusual set of factors. The most important among them include low capacity utilization rates, above-average real interest rates, an uncertain tax environment, weak prices for resource-based products, and a rapid deterioration of profits and cash flow at the depth of the 1981-82 downturn. Furthermore, in 1981 the investment/GNP ratio achieved a cyclical high of 24 per cent. The slowdown was uniform across sectors and by type of investment but somewhat more severe for residential housing. The base case implies a modest recovery in business investment during the medium term. Investment as a percentage of GNP, however, is not expected to recover significantly from its current low levels (Appendix Table A-7). It is expected to average about 20.5 per cent – about 1.5 to 2 percentage points below the average for the last 25 years.

Of this projected shortfall, residential investment alone accounts for about half. Housing starts are expected to average about 150,000 units per year during the projection period – appreciably less than the housing requirements of 210,000 units estimated by the Canada Mortgage and Housing Corporation[7] and consistent with demographic needs. Despite high borrowing costs and low utilization rates, however, there are some reasons for optimism. For example, in the energy area, changes introduced by the Western and Atlantic Accords make the expansion of energy-related investment in western Canada and Newfoundland more likely, and the case for investment in areas other than energy and housing is now stronger, as low and stable inflation, improved cash flow, increased output, pent-up demand for replacement investment, and the need to upgrade to high-tech methods are all expected to contribute to an improvement in the medium term, despite above-average real interest rates.

The investment outlook is one that could easily turn out to be quite different from what we anticipate. Not only could policy changes have an impact on the investment climate, but the number and diversity of nonpolicy factors that can alter the housing market, energy development plans, and/or the expansion needs of the manufacturing, transportation, and communication sectors are significant enough to motivate us to develop two additional cases – one more optimistic than the base case outcome for investment performance, and the other less optimistic. If anything, these cases illustrate the extent to which investor confidence can act as a tonic for, or bedevil, current problems, including unemployment, the deficit, and productivity (Appendix Table A-6). A variation in the investment/GNP ratio by as little as 1 percentage point could bring substantial change to these indicators.

Government Deficits

One of the factors clouding the medium-term prospects for many western economies is the substantial increase in public debt that has recently occurred. The size and projected growth rate of public debt have serious implications for deficits, inflation, real interest rates, investment, productivity, and more generally the role of government in the conduct of economic stabilization policy. The persistence of large deficits over the last 10 years has provoked public debate about their causes and consequences, and about the strategies to reduce them. The Council followed the development of this debate in both its Seventeenth and Twenty-First Annual Reviews.[8]

A look at the evolution of federal debt over the last 25 years and at the federal government revenues, expenditures, deficits, and debt as a proportion of GNP shows that, prior to 1973, the federal budget was generally in balance (Appendix Table A-8). But since 1976, the federal deficit has grown steadily, reaching nearly $30 billion (on a National Accounts basis), or almost 7 per cent of GNP in 1984. Our analysis in the Twenty-First Review indicated that, contrary to the perception of many, increases in spending on current goods and services did not contribute to the increases in the deficit/GNP ratio. Rather, the increase resulted from extraordinary growth in other spending categories in relation to GNP, such as transfers (to persons, corporations, and other levels of government) and debt service charges owing to the rise in nominal interest rates. And the government had very little control over many of these factors, such as unemployment insurance payments or debt charges. Furthermore, revenues failed to keep pace with expenditures, partly because of what has come to be known as the growth of tax expenditures.

In spite of sustained economic growth in 1983 and 1984, of moderate increases in real personal income and corporate profits, and of a small but steady decline in the unemployment rate, the size of the federal deficit persisted. Thus the stage was set for a substantial change in fiscal policy, as did occur in the May 1985 Budget. During the next five years, the federal deficit/GNP ratio is projected to average about 4.8 per cent, pushing the debt/GNP ratio to about 46 per cent in the medium run. Because of measures introduced in the May 1985 Budget, the debt/GNP ratio is expected to stabilize at less than 50 per cent, on average, during the period 1991-95. Thus the actions taken in May 1985 by the federal government have changed for the better many of the ominous trends related to deficits of the past decade.

Deficit projections are very sensitive to assumptions about economic activity and interest rates. A weaker U.S. economic outlook, coupled with higher real interest rates, could substantially increase both deficit and debt levels above those of the base case. On the other hand, a stronger U.S. economic outlook, brought on by lower real interest rates, could substantially improve the budget position of Canada's federal government. Thus the success of the deficit reduction program introduced in the May 1985 Budget depends, in part, on events external to Canada.

The Strength of Canadian Exports

We cannot dismiss the possibility that the structure of Canadian export markets could change in the future, perhaps even within the time frame of our projection period. A historical analysis reveals one indisputable fact: the share of Canadian merchandise exports in world trade has declined over the past two decades. In 1970 that share was 4.5 per cent, while the base case projection shows a drop to 4.1 per cent by 1990. The loss of share has been concentrated mainly in primary goods – traditionally an area where Canada was competitive. This development has been costly to Canada in terms of lost jobs and lost productivity gains as many of our exporting industries are high-productivity industries, and in terms of lost income.

More recently, Canada's export trade has shown some strength, and some of the loss in its share of world trade has been recaptured, as large gains have been made in automotive trade with the United States. But in the medium run, automotive export activity will be tempered by the U.S. demand cycle, and southward flows are not expected to remain at the high levels recorded during the recent recovery period. During this peak period, about 76 per cent of exports went to the United States, compared with an average of about 68 per cent during the previous decade. When trade in automotive-related goods returns to a more normal demand pattern, we expect that Canada will lose some of those recent gains in share. Over the long haul, the performance of exports is not expected to differ much from that recorded during the period 1974-84, when growth in trade of merchandise goods expanded at about 5 per cent per year (Appendix Table A-9).

Export potential is apparent in areas such as the Pacific Rim and South America, where newly industrialized countries continue to show strong growth, although some of them, especially in South America, have recently been burdened with large amounts of debt. Also, a potential market in a very early stage of development is that of China – a country whose sheer size makes its desire for the development of trade ties very attractive to aggressive exporters. But Canada's real opportunity may lie in its own front yard, so to speak.

A recent paper by the federal government addresses a variety of issues concerning Canadian trade policies that affect export performance.[9] This paper underlines the extent of activities aimed at altering the present structure of Canadian export trade by achieving substantial gains in access to key export markets for both merchandise goods and services. Over the past several months, initiatives have been undertaken by several of Canada's major trading partners – the United States and Japan, in particular – with a view to opening a new round of multilateral trade negotiations under the auspices of the GATT (General Agreement on Tariffs and Trade). At the same time, there has been an intense debate on the possibility of a bilateral free-trade agreement between Canada and the United States. Such an agreement, although complex to negotiate, could be of great long-term benefit to Canada. This Council has explored the issue of free trade in the past and has been strongly in favour of such arrangements.[10] It is postulated that the gains to Canada from a free-trade arrangement would be substantial, especially in the area of productivity improvement achieved through scale effects.

The U.S. Economy

For an open economy such as Canada's, the strength and stability of economic growth in the medium term depend on the health of its export markets and on its ability to compete, even more so when the only guarantee of access comes from a competitive edge. Furthermore, the prospect for a sustained and vigorous recovery in world trade during the projection period depends in part on the future course of real interest rates and of the U.S. dollar.

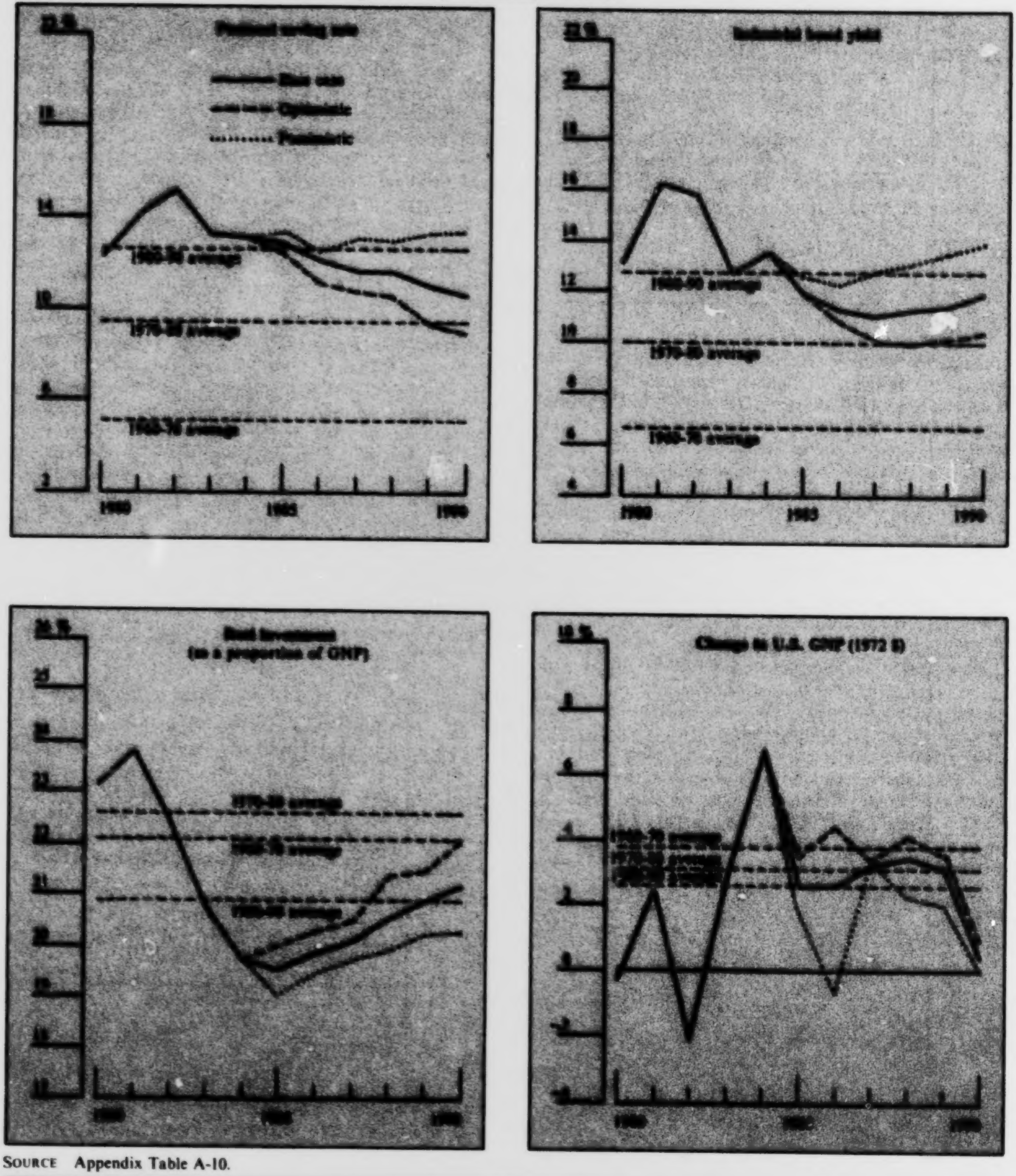
The causes of above-average real interest rates are not fully understood. Among those which are often mentioned are the failure of inflationary expectations to adjust downward as historical inflation rates decline, fears about the size of future government deficits in the United States and about their implications for the mix of fiscal and monetary policy in that country, and worries about the stability of the international financial system in view of the debt problems of developing countries.

One consequence of high U.S. interest rates has been a sharp increase in the value of the U.S. dollar. The repercussions of a high-flying dollar have been many. In fact, the U.S. dollar (trade-weighted) has appreciated by about 40 per cent over the past three years, and this strength has severely constrained the opportunities of other countries to pursue an independent monetary policy. Even though this development has helped the United States to lower inflation, it has sharply reduced the competitiveness of U.S. goods abroad. Furthermore, fiscal-policy-induced growth, combined with a strong dollar, has had an adverse impact on U.S. net exports. As a result, the current account of the balance of payments plunged from a surplus of $6.3 billion in 1981 to a deficit of over $100 billion in 1984. Should such large current-account deficits persist, the United States could become a huge net debtor by 1990. In these circumstances, it is possible that there could emerge in that country a policy intent on attacking the twin deficit problem (budget and trade) that would be stronger than that included in our base case assumptions. Depending on the outcome, this development could bring relief or pose a serious threat to both developed and developing nations alike.

For example, large and rising current-account deficits in the United States could lead to additional problems for countries already burdened with large external debt. Or, coupled with a stronger recovery overseas, those rising deficits could put more downward pressure on the U.S. dollar in the medium run than we have anticipated in the base case. This could result in a tightening of monetary policy by the Federal Reserve Board, so as to arrest the inflationary pressure arising from quick devaluation. Consequently, real interest rates could increase, putting downward pressure on business investment in particular and indirectly on trade in general. Trade-induced activity reductions in other countries would certainly widen their budget deficits. The impact of a weakening U.S. dollar on real interest rates depends, however, on both the size and speed of the currency depreciation and the reaction of the Federal Reserve Board. If the depreciation of the dollar were gradual, the pressure on inflation and interest rates in the United States could be small in view of the slack and of the lower inflationary expectations that prevail now. On the other hand, if the depreciation were sharp, the Federal Reserve Board might follow the less desirable route and raise interest rates to moderate the effect of currency realignment on inflation.

Chart 2-3

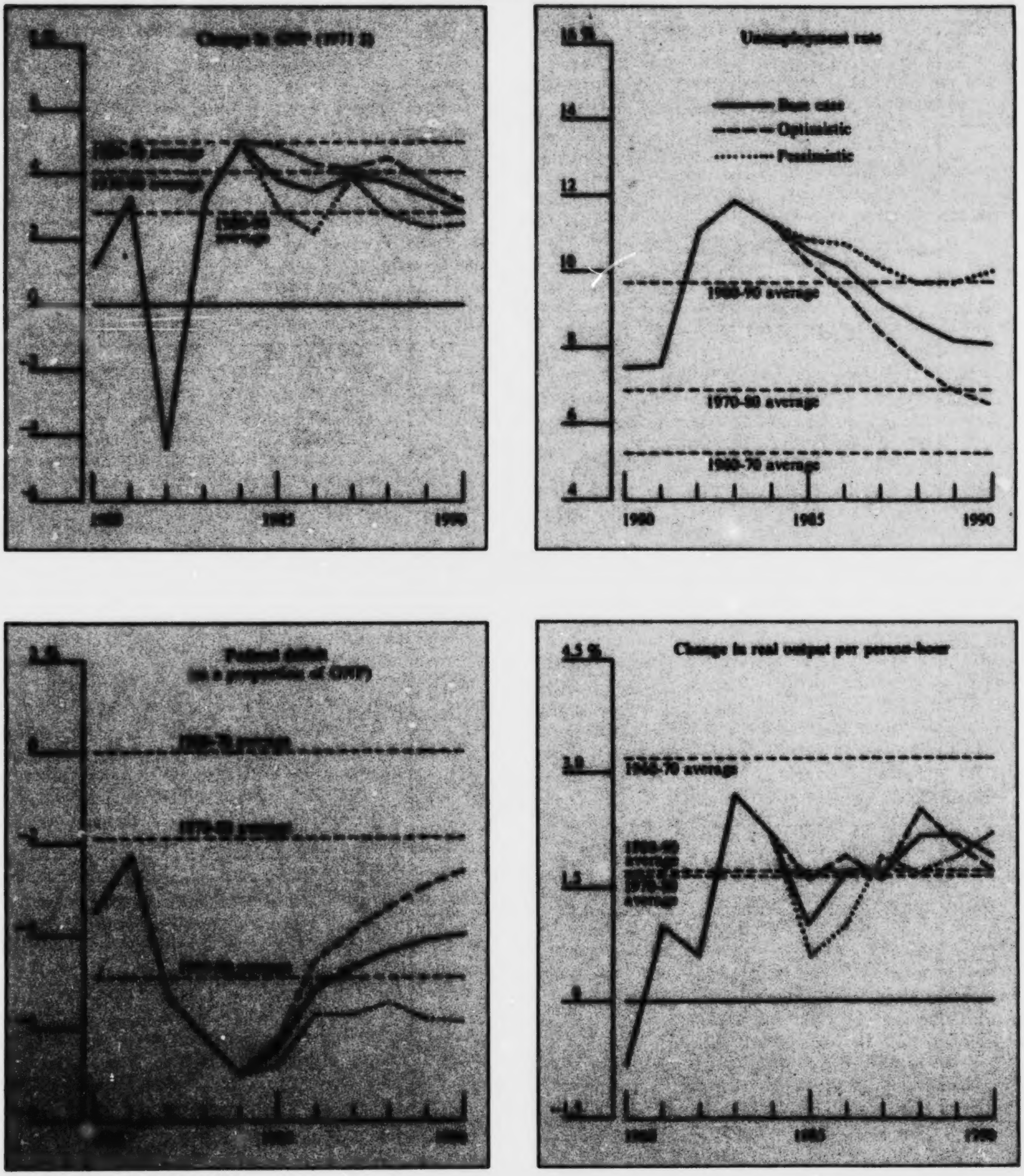
Key Determinants for Three Projections, Canada, 1980-90



SOURCE Appendix Table A-10.

Chart 2-4

Selected Economic Indicators for Three Projections, Canada, 1980-90



SOURCE Appendix Table A-10.

Our base case projection includes some anticipated policy adjustments that will improve budget prospects in the United States over the medium term. This, in combination with our assumption of a gradual fall of about 30 per cent in the value of the U.S. dollar against other major currencies, is expected to permit some downward adjustment in real rates over the medium term. To assess the sensitivity of the base case to assumptions about U.S. interest rates and the U.S. dollar, we have developed two alternative cases. The first includes higher U.S. interest rates, which weaken the current recovery; the second case includes low interest rates and continued strength in the outlook for the U.S. economy. The two alternatives provide for a band of about 300 to 400 basis points around the path for interest rates in the base case.

Lower interest rates and a strong medium-term outlook for the United States – our second alternative case – raise the projected Canadian growth rate by about 0.3 percentage points per year during the period 1985-90. As a result, the Canadian unemployment rate drops to 7.1 per cent in 1990 (Appendix Table A-6). Increased tax revenues and reduced expenditures on unemployment insurance benefits lower the federal budget deficit/GNP ratio by about 1 percentage point in 1990. Nevertheless, the improvement of demand in the markets for both goods and labour leads to wage/price pressure. As a result, the inflation rate by 1990 rises by about 1 point over the base case figure. In contrast to the "high U.S. growth" case, the "low growth" case reduces output growth, increases the unemployment rate, increases the government deficit, and lowers the inflation rate..

The Performance Band

For planning purposes it is more useful to use a range of anticipated outcomes rather than a point estimate, especially when looking five to ten years into the future (Charts 2-3 and 2-4). Three areas that may not unfold as anticipated include inflationary expectations, the strength of the recovery in business investment, and the prospects for U.S. interest rates and the U.S. dollar – and, more generally, the prospects for U.S. economic growth. Looking at extreme positions around the base case can be facilitated by combining the "high inflation," "high U.S. interest rate," and "weak domestic investment" alternatives into what we have labeled the "pessimistic" alternative. An "optimistic" alternative would then include low inflationary expectations, low U.S. interest rates, and strong domestic investment.

The optimistic alternative increases real GNP, lowers the unemployment rate, and reduces the budget deficit. During the period 1985-90, growth in GNP averages 4.1 per cent – 0.6 points above the base-case growth rate. As a result, the unemployment rate declines in 1990 from 8.1 per cent (the base case value) to 6.4 per cent. Similarly, improvement in the federal deficit is also part of the result (Appendix Table A-10). Nevertheless, the improvement in both product and factor markets, as well as the disappearance of cyclical improvements in productivity, contributes substantially to a pick-up in inflation during the latter part of the projection period. By way of contrast, the pessimistic alternative lowers growth in output, raises the unemployment rate, and substantially increases the deficit/GNP ratio. Consequently, the federal debt/GNP ratio rises at an accelerated pace during the projection period, averaging about 58 per cent during the period 1991-95, compared with about 41 per cent for the optimistic case.

These scenarios illustrate the impact that alternative events could have on the medium-run prospects for Canada. Over and above the illustrative value of such an analysis, it clearly suggests a substantial variation in the base case outlook for real GNP, unemployment, government deficits, and public debt. Our concern is to hold such variations in the medium run to a minimum and thus improve average performance, particularly in the area of real growth. A better understanding of three key areas will add to our ability to achieve these goals. These areas are productivity performance, investment performance, and the international aspects of monetary policy. The next four chapters are devoted to those issues.

3 Productivity: The Core Issues

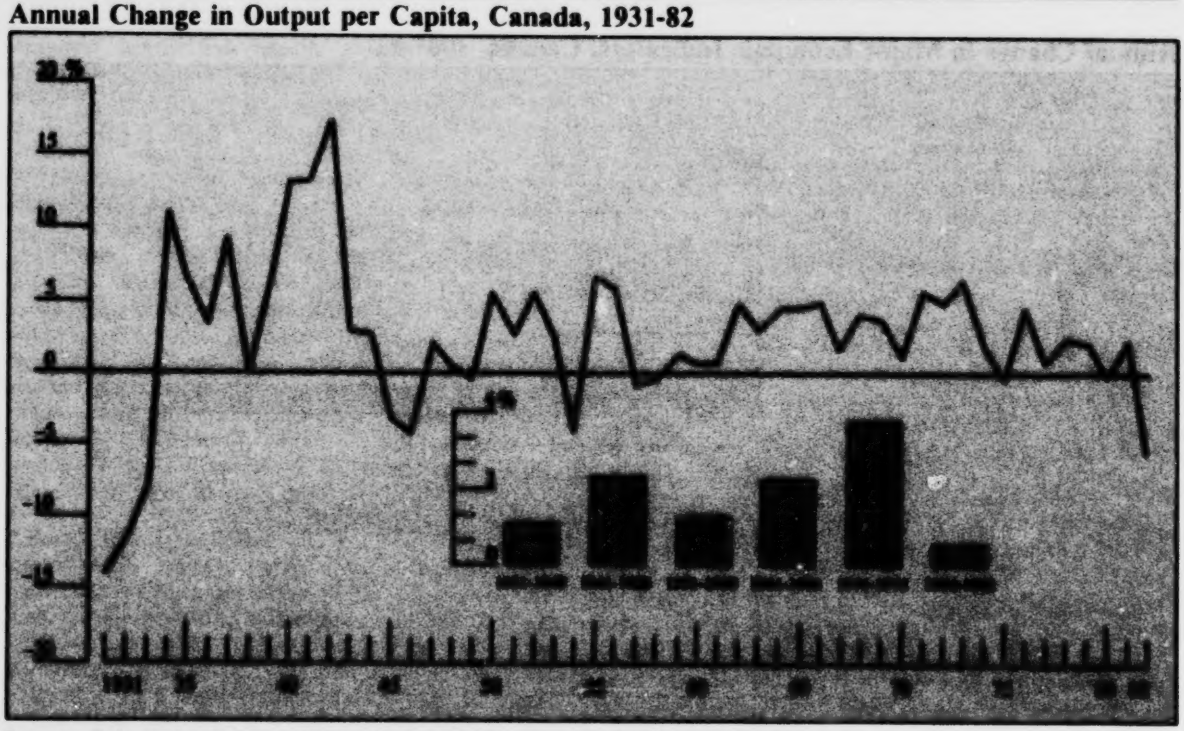
It is easy to conjure up particular images of improvements in productivity. For example, a better cook in a better kitchen serves up better meals, faster. A trawler lands more fish than a dory schooner, with fewer hands. Fast-food franchises are more efficient than independent establishments. A lawyer can handle more cases with a word processor. Airlines with computerized booking systems fill more seats, with fewer personnel. Propane prolongs the engine life of a truck. Communications systems based on fibre optics carry more messages. More fresh milk is distributed in cartons and bags than in bottles. The list is almost endless: whenever a firm reduces its costs per unit of output even as input prices remain unchanged, or whenever it increases its output per unit of input, it raises its productivity level.

It is the application of the concept of productivity improvement to the economy as a whole that is more difficult to grasp. The need to broaden the scope of this concept is especially pressing when the economy suffers from slow growth and policy makers attempt to design programs that will bring it back to a more satisfactory performance. When the economy is in good health, the need for new policy is less.

When the efficiency with which people, machinery, buildings, equipment, raw materials, and knowledge are combined to produce more goods and services improves continually, this inevitably results in higher real incomes and standards of living – the wherewithal to do more with our lives, both individually and collectively. It is no coincidence that during the 1950s

Chart 3-1

Annual Change in Output per Capita, Canada, 1931-82



Source Estimates by the Economic Council of Canada, based on data from Statistics Canada.

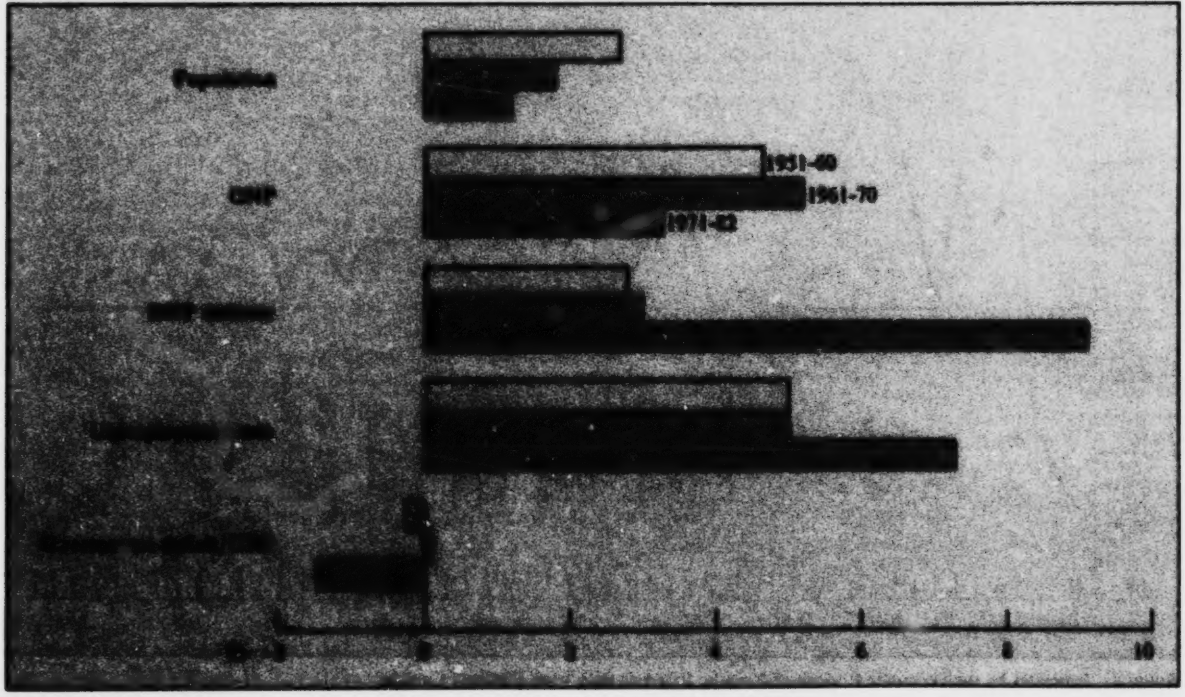
and 1960s, when output growth outran population growth by a healthy margin, Canadians in general achieved their greatest gains in real incomes. As a nation, we added significantly to our social safety net – pension programs, health care, education, and child support, for example – and expanded considerably our transportation and communications infrastructure.

Nor was it a coincidence that trouble began after 1973, the year when productivity gains, in the aggregate, ceased – when the rate of output growth slipped below the already slowing pace of population growth, and real per capita incomes barely maintained their upward trend (Chart 3-1). Since 1973, Canada has been beset by two bouts of inflation (in 1974-76 and 1980-82) and has experienced high unemployment and mounting government deficits. Many observers believe that it will be difficult to reduce both unemployment and the federal deficit over the relatively short period of about five years once considered appropriate for economic planning (Chart 3-2). Many of these problems, and more, are captured in one plain truth: national productivity growth during the late 1970s and early 1980s went flat. For the first time in the lives of Canadians now in their 40s, growth in living standards appears to be seriously threatened (Chart 3-1).

In our 1983 report on the links between technological advance and increased trade, on the one hand, and productivity and real incomes, on the other, we indicated that the problem was not one of declining productivity but of diminishing *growth* in productivity.[1] The Canadian economy is still very productive and real incomes remain high, but the evidence now suggests that the level of productivity itself remained unchanged during the late 1970s and early 1980s. In *The Bottom Line*, we also outlined the potential consequences of zero growth in productivity, and hence in living standards, over the long term.[2] We pointed out that in a zero-growth economy, difficult tradeoffs would have to be made among the different groups in society; the gains made by one group would be at the expense of other groups, and they would likely be short-lived.

Chart 3-2

Annual Change in Major Economic Indicators, Canada, 1951-82



Source Estimates by the Economic Council of Canada, based on data from Statistics Canada.

The Productivity Debate

Now, Canadians seek ways to return to the old regime of sustained high growth in real per capita income. There are those who say that demand should be stimulated, while others fear that such a course would bring back inflation – that growth would surely be followed by another slump and that the price for this short spurt of growth (renewed unemployment, inflation-induced hardship, and so on) would be unacceptable. Yet others argue that if no other economic escape can be devised, we must give up some part of the social programs that were put in place in better times.

There are some who fear a return to high-level performance itself, if it is to be achieved by technological advance or freer trade that could result in the displacement or uprooting of Canadians, even in the short run. Others argue that the ensuing real growth and expanding competitive markets would be self-correcting – that the majority would benefit and that a return to strong growth would provide the means to offset any inequities, inefficiencies, or failures that might occur along the way.

Moving from popular images to operational perceptions in this debate will not be easy. At the outset Canadians must break away from the idea that their economic health and wealth depend only on the strength of demand. How often do we hear that lack of demand has been largely responsible for the poor performance of productivity since 1973? The remedies proposed – stimulative fiscal policy, accommodation by monetary authorities, and greater access to foreign markets, to mention only a few – all have this orientation. But demand is only half the story. The supply capabilities of Canadian factories and businesses constitute the other half. The ability to deliver to the marketplace goods and services that are competitive in price, quality, and technical characteristics is also important. We know a bit about the prospects for demand – the areas of strength and the factors that might contribute to uncertain conditions (see Chapter 2). But what about Canada's ability to produce? What contributes to those capabilities? These are the core issues in productivity analysis.

People, machines, buildings, public infrastructure, raw materials, energy, and land are all elements that contribute to the production of goods and services. But beyond these quantifiable realities are more intangible elements, such as the skills that each of us takes to the workplace, the quality of management, and the technology that we encounter on the job or in the marketplace. "Best practice" on the job, or embodied in the tools and equipment we use, can give us a competitive edge. Often the choice of plant size and the degree of specialization also contribute to the making of an efficient operation, as do the intensity and flexibility of resource use; indeed, these characteristics can be just as important as the use of skills and technologies. An underutilized facility or one with limited flexibility in choosing production methods will prove to be a high-cost operation. Also part of the picture is the marketplace itself, as well as the effectiveness with which resources are siphoned away from inefficient plants or businesses to low-cost, high-return activities.

As one digs deeper, it is not long before measurement problems appear. For example, if a generic drug costs only half as much as its brand-name counterpart for a dosage of identical strength, does this mean that the quality of the latter is twice that of the former? It is simple questions such as this that give statisticians and economists headaches when attempting to measure productivity. How does one incorporate quality improvements into measures of output? Add to this the increased presence of health and safety standards in the workplace; emission control standards; licensing agreements; entry restrictions, including trade barriers and protectionism; union and management practices that influence the allocation of human resources; tax and subsidy schemes, at all levels of government, designed to encourage (or discourage) this or that activity; and so on. We shall tackle some of these issues in the next chapter.

What Is Total Factor Productivity?

The essential process of extracting the Canadian economy from its dispirited state will not, however, be well served until the negative connotations suggested by the familiar term "labour productivity" are removed. Although labour productivity is meant as only one convenient measure of productivity – output in relation to one of several inputs, namely employment or person-hours worked – it has been misused by some and misconstrued by others. It is perhaps inevitable that such distortions should happen, since labour productivity remains the only productivity statistic that is easy to estimate – and the only one published by Statistics Canada.

Leaving aside indefensible statements suggesting that the work ethic has nearly expired or that today's workers are unmotivated, the argument is often made nowadays that labour productivity went flat because of the rising proportion of working women and younger people in the labour force. Without anticipating the analysis that follows, it can be said here that the new configuration of the labour force has contributed so little to the overall decline in the rate of productivity improvement that it need not be discussed in a general debate about this issue. For the real reasons why

Canadian productivity gains came to a standstill during the past decade or so, we must look elsewhere.

The broader concept of productivity is commonly labeled "total factor productivity" (TFP). Quite simply, TFP corresponds to what "productivity" was meant to convey in the first place – namely, that increases in output can be attributed (conceptually, if not always statistically) to some net increase in a composite of all the individual elements engaged in the process of production. They range beyond labour to include capital, materials, energy, and many other "factors" (or "inputs"). Because different industries use the various factors of production in different combinations, it is the analyst's task to weight these factors – the measurable ones, at least – in order to produce acceptable comparisons between industries and to estimate aggregate productivity data. The result is a picture of productivity growth (or of the absence of growth) as a synergistic process – as close to the real world as economics in its present state can get.

Schematically, we can think of goods or service outputs as resulting from the combination of various production inputs. Accordingly, the level of TFP can be viewed as the ratio of a measure of outputs to a composite measure of efficiently combined inputs. The growth of TFP is then viewed as the change over time, or from one circumstance to another, of output per composite unit of production inputs.

What is remarkable about total factor productivity is its close relationship to many everyday measures of economic performance. For example, the base case discussed in Chapter 2 was judged in terms of output growth, labour productivity and cost performance, wage and price prospects, and the outlook for inflation. In one way or another, TFP influences the performance of each of these indicators. Consequently, understanding these relationships is the key to understanding the dynamic supply capabilities of the Canadian economy.

Output, Inputs, and TFP

We can begin our analysis with an apparent paradox. Consider a particular company (or industry) for which we can tally the use of various inputs – people, capital, energy, and materials – over a period of, say, 10 years. We can then compute how each of the inputs has increased and weight all of them appropriately to get a composite measure. Almost invariably it will be found that this composite measure of the growth of individual inputs is *less* than the company's total growth of output over that period. This seeming anomaly is easily explained: output has grown faster than the inputs because the inputs have been used more effectively and more efficiently in that company. There has been an increase in total factor productivity for that firm.[3]

The same can occur in the economy as a whole, with one variation: since energy and materials net out (because intermediate inputs are excluded by definition from the National Accounts concept of GNP), only labour and capital are used in estimating the composite measure of input growth over time. Usually that measure falls short of the growth rate of GNP. The difference (or "residual") is the growth in total factor productivity for the whole economy. Identical results can be obtained by using a weighted sum of TFP estimates for individual industries, provided there have been no shifts of resources from one industry to another during the period.[4]

If there have been resource shifts, the difference observed between the TFP measures estimated on the basis of national data and those using properly weighted industry data seems to point to a second paradox. But the existence of this difference only confirms that markets are working properly – i.e., that resources have been on the move and that gains in efficiency have resulted. Understanding these mechanisms gives the analyst more scope in sorting out what caused the curve of the growth in living standards to slope downward after 1973.

Labour Productivity and TFP

While the use of labour productivity in isolation is likely to lead to misuse, this concept has great value in the analysis of total factor productivity. It can be demonstrated that the growth in output per person-hour at the national level is precisely equal to the growth in national TFP plus the growth in the national capital/labour ratio, appropriately weighted.[5] The same is true for a firm or an industry: the rate of growth of its labour productivity is the sum of its TFP growth plus the growth not only in its capital/labour ratio but also in its ratios of energy and material inputs to labour, all appropriately weighted.

Whether at the firm, industry, or national level, these linkages are not merely approximations or statistical correlations but exact relationships.[6] It is easy, therefore, to see that labour productivity can change if there is any shift at all in the proportions of the various inputs in the production process – if capital is used to replace some labour or if energy is used to replace some capital, some labour, some materials, and so on. This would be in addition to any change that occurred in labour productivity as a direct result of changes in TFP. Thus the superiority of TFP over the concept of labour productivity is apparent: labour productivity is often influenced by substitution effects, whereas TFP is not.

Costs and TFP

As it turns out, there is a third paradox. The analyst could just as well compare growth in input prices and output unit costs rather than growth in input and output quantities. Many businesses make such comparisons as part of their regular cost-control and profit-outlook activity. If the growth in the prices of all inputs over time is weighted to form a composite measure of change in input prices, usually this growth is found to be greater than that of the industry's unit production costs over the same period. This discrepancy is also a measure of TFP growth, but it is derived from cost, rather than production, data. Even so, it is precisely equal to the TFP measure derived by using input and output quantities.[7]

If this differential is passed on, in part, to the consumers, real wages will eventually rise by an amount identical to the growth in TFP. In other words, when the incomes of Canadians grow faster than the prices of the goods and services they purchase, their living standards rise. Positive growth in TFP is a necessary ingredient for positive growth in the real incomes of Canadians.

As long as nominal wages and TFP grow apace, there will be no domestic pressure on prices from the supply side of the economy – that is, from producers – provided that firms price their products or services at a constant markup over unit labour costs or unit factor costs. In the period 1958-73, unit factor costs in Canada rose at a rate not much different from the general price level (the GNP price index) of about 3.3 per cent a year (Appendix Table B-1), while average factor prices (nominal wage rates, interest costs, and so on) grew at about 5.5 per cent a year over the same period. The change in TFP, which rose by about 2.4 per cent, was responsible for the difference. Obviously, it was TFP that made a major contribution to rising real incomes during that period.

The period 1974-82 is another story. The general price level rose by 10.2 per cent per year, and unit factor costs went up by about the same amount (10.4 per cent per year). But average factor prices also grew at a similar rate. As a result, the change in TFP was close to zero, and growth in real incomes slowed down appreciably.

Inflation, Money, and TFP

Canada's recent experience with high rates of inflation has led to general agreement that excessive increases in the supply of money and credit can sustain inflation, partly because they feed expectations that can lead to a wage/price spiral. But what caused inflation to begin in the first place?

One factor may have been the expectation that the momentum of past experience with favourable real income growth would continue, in the context of a slowdown or halt in TFP growth that was ignored or misunderstood.[8] If this explanation is correct, that situation, in combination with the two oil price shocks, was a recipe for disaster.

Contrast this with the spiral idea – wage increases leading to price increases, which in turn lead to renewed wage increases, the whole process intensified by the effect of monetary expansion, which results in dissipating the possibility of any real gains. Thus some people argue that it was inflation itself – common to most industrialized countries after the 1973 OPEC price shock – that was to blame for the disappearance of TFP growth thereafter.

Perhaps there is some truth in that: inflationary distortions could have contributed to inefficient resource allocation, which in turn could have contributed marginally to the vanishing of TFP growth. But it seems more likely that the situation was the reverse – that TFP growth was sensitive to the rate of change in relative prices, rather than to the inflation process *per se*, and that when growth in TFP disappeared without anyone noticing, inflation resulted.

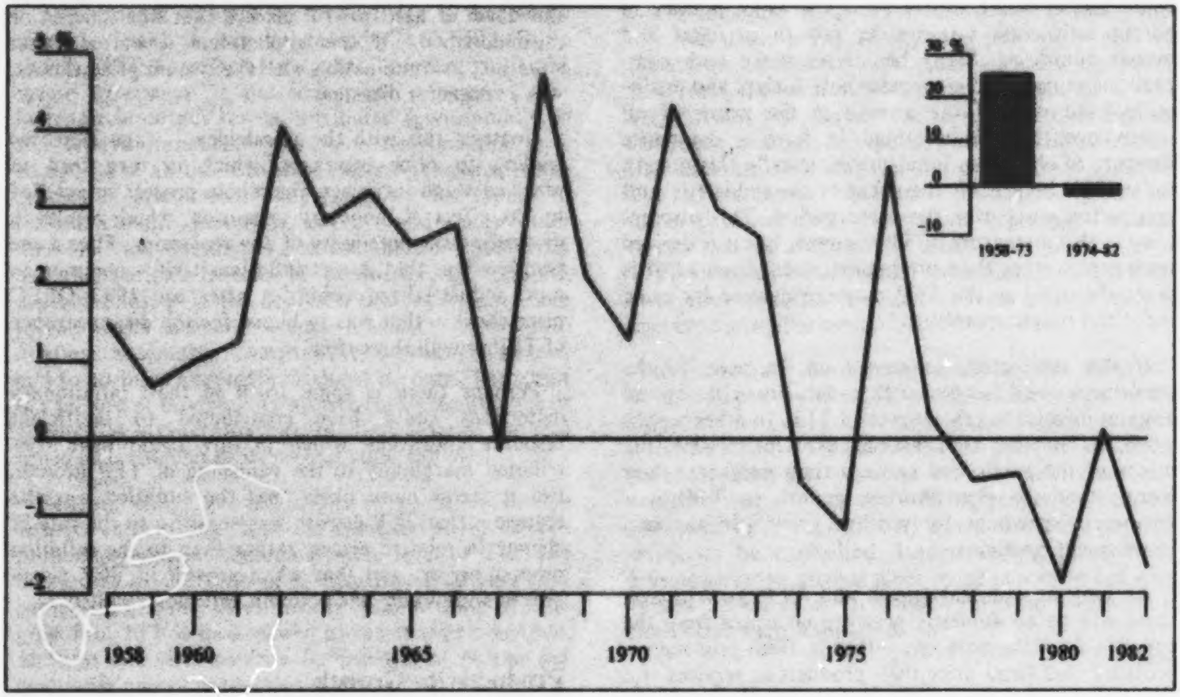
Productivity Growth Before and After 1973

In what way does the post-1973 period differ from the 1960s and early 1970s? Between 1961 and 1973 there was only one year (1967) when the rate of growth of total factor productivity for the national economy was negative (Chart 3-3 and Appendix Table B-2). There were 10 years in which it accounted for at least 2 percentage points of the growth in total real output. By contrast, between 1974 and 1982 there was only one year (1976) in which growth in TFP made a similar contribution to overall economic growth but six years in which it was negative. The pre-1973 growth of TFP averaged about 2.6 per cent a year. After 1973 it was, on balance, negative.

Was this deterioration related to any particular industry? In the earlier period, large, direct contributions to national TFP growth were made by the manufacturing industries, as well as by transportation, communications, and trade (Chart 3-4 and Appendix Tables B-3 and B-4). As a group these industries accounted directly for about one-third of the growth in Canadian TFP. In fact, most industries contributed to TFP gains during the period 1967-73. The only exceptions were the agriculture, fishing, and trapping group and the finance, insurance, and real estate group, both of whose contributions were near zero.

Chart 3-3

Change in Total Factor Productivity, Canada, 1958-82



Source Appendix Table B-2.

After 1973 TFP growth collapsed in almost all industries, slowing down considerably in some and becoming negative in others. The deterioration in performance was pervasive.

Resource Shifts

Historically, one important source of productivity growth in the Canadian economy has been the shift of resources from one industry to another – from industries with low productivity to those where it is higher.[9] In the period 1958-66 these shifts accounted for about half of the national growth in TFP (Chart 3-4). Thereafter the analysis shows a progressive decline, with resource shifts accounting for 30 per cent of TFP growth in the period 1967-73 and making an even smaller contribution from 1974 on. Thus another difference emerges between the two periods: less of a bonus resulted from the intersectoral movement of resources after 1973.

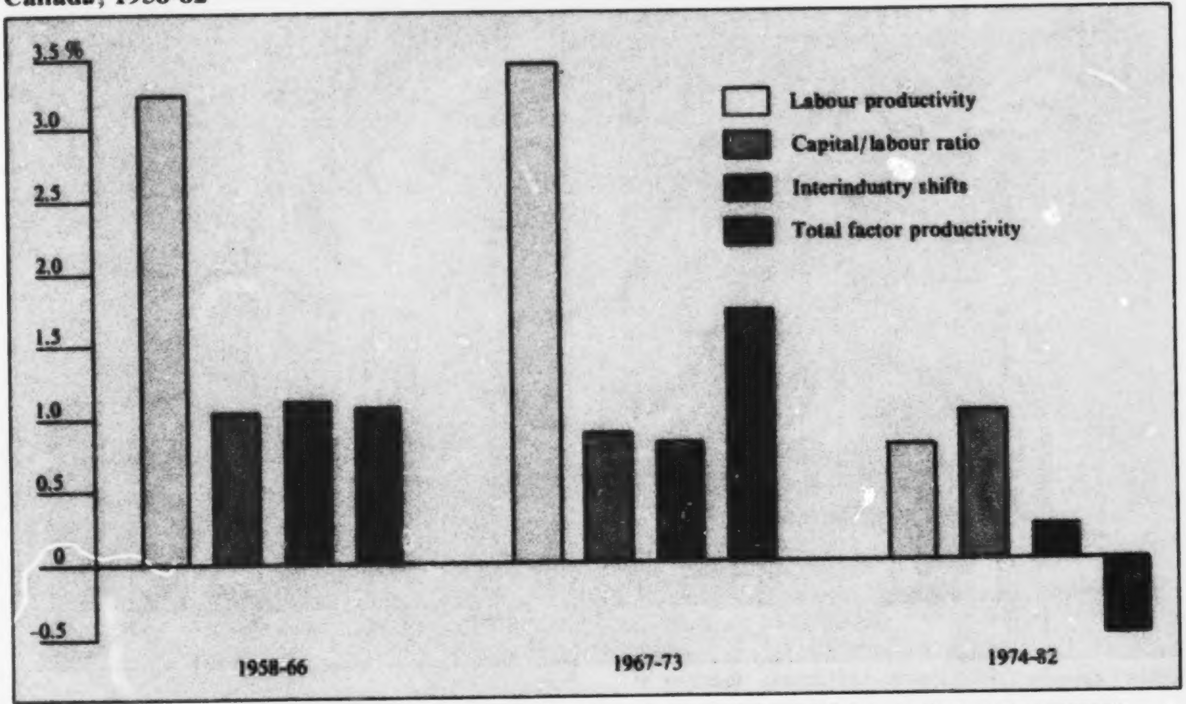
This pattern reflected a declining opportunity to raise the growth rate of TFP by reallocating productive resources within the economy; it suggests that there may, as a result, have been less incentive for such reallocation. Aside from the shift of resources away from agriculture, many factors could have contributed to this situation, including the distortions created by inflation, the psychology of a risky investment environment, and uncertainty about the rates of return associated with the present tax system.

Labour Productivity

The pervasive winding-down of TFP growth was also reflected in the growth rate of labour productivity, which fell from about 3.3 per cent a year in the pre-1973 period to only 0.8 per cent thereafter. About two-thirds of the rate of increase in labour productivity in the period 1958-66 came from the overall gain in national TFP, and the balance from an increase in the ratio of capital to labour (Chart 3-4). In the period 1967-73 the percentages were slightly different: about 75 per cent of the labour productivity growth rate could be traced to the rise in aggregate TFP, and about 25 per cent to the increasing capital/labour ratio.

Chart 3-4

Average Annual Change in Components of Labour Productivity Growth, Canada, 1958-82[1]



[1] National total factor productivity is augmented by interindustry shifts and changes in the capital/labour ratio to produce aggregate labour productivity growth.

SOURCE Appendix Table B-3.

No part of the tail-off in overall labour productivity growth after 1973 can be traced to a decline in aggregate capital inputs relative to labour; in fact, the capital/labour ratio for the Canadian economy has continued to increase.

Factors That Influence the Growth of Supply

The decline in the rate of TFP growth from resource reallocation provides only a partial explanation of the collapse of overall TFP growth. There are other, less tangible factors that also play a role in TFP performance – factors such as the skills of workers, "best practice," the scale and scope of operation of plants, the intensity and flexibility of resource use, and the effectiveness of resource reallocation. The last of these – resource reallocation – faded substantially after 1973. What about the others?

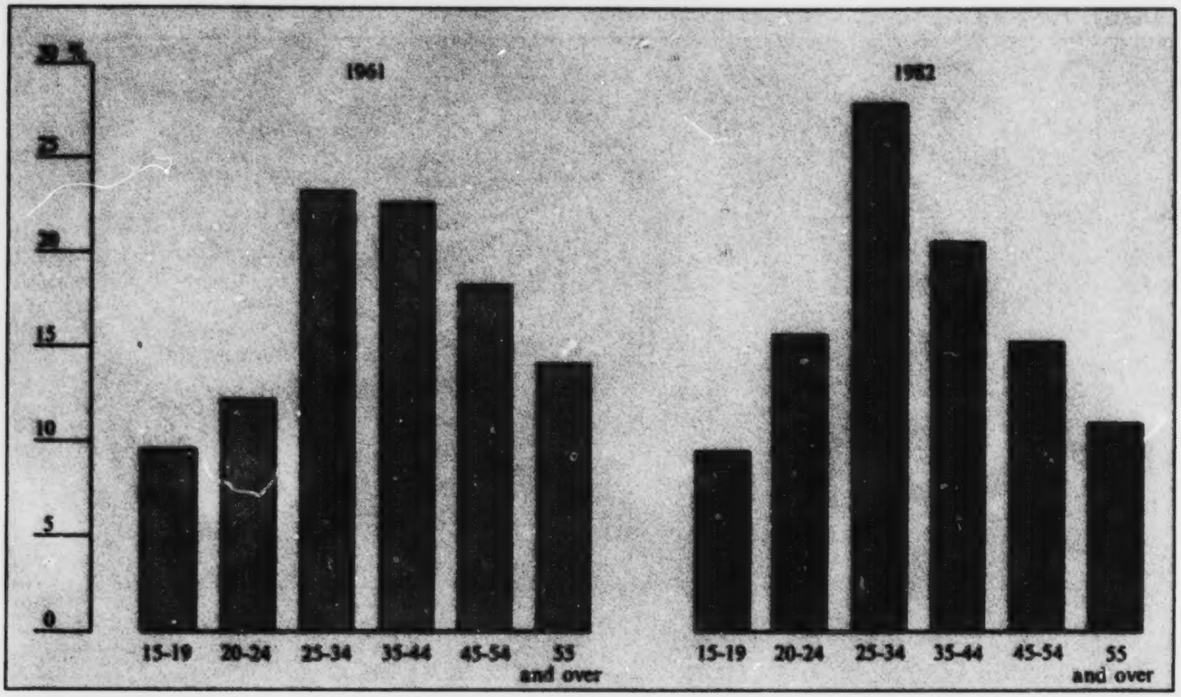
Labour and Skill

What part of the decline in TFP growth can be attributed to changes in the structure of the labour force itself – that is, in the age and sex profile of workers and in their education and skill levels? Since the 1950s there has been a substantial increase in the average years of schooling of people in the labour force, and these gains continue today, albeit at a slower rate. Later, in the 1960s and early 1970s there began an infusion into the work force of large numbers of women and of younger people (the "baby boomers") of both sexes (Charts 3-5, 3-6, and 3-7, and Appendix Tables B-5, B-6, and B-7).

If the earnings of individuals are used as a proxy for their incremental contribution to the supply of goods and services in the economy – many argue that this procedure is subject to question[10] – then the reshaping of the labour force towards women and youth at the

Chart 3-5

Age Profile of the Labour Force, Canada, 1961 and 1982



SOURCE Appendix Table B-5.

start of their income careers suggests that their aggregate inexperience would tend to depress the rate at which labour input can grow. As our analysis indicates (Appendix Table B-8), this did in fact happen, but the effect of that adjustment on the overall growth of labour input was very small – less than one-fourth of a percentage point. Thus it would be erroneous to suggest that the slump in TFP growth was due to a younger, more feminine work force. In fact, our results suggest that even the slight drag on TFP caused by that factor was dissipated by the continuing increase in the level of education.

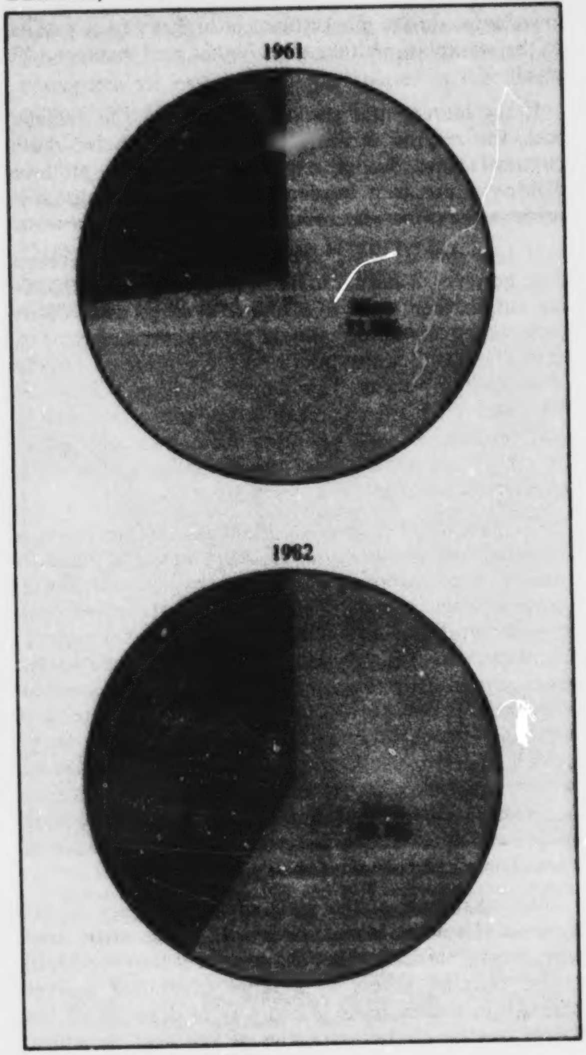
Capital and "Best Practice"

While workers' wages can be taken as an indicator of the "price" of labour, there is no similar market indicator for capital. There is no "unit rental price" for capital, for example, that could be used to assess how different kinds of investment make a greater or smaller contribution to supply. To perform such an assessment, we must turn to a different type of analysis and look for some, at least, of the key factors influencing investment decisions.

Any investment project reflects a judgment about the relationship between the initial outlay and the net income it is expected to generate. The "present" value of that income stream (that is, its value at the time of the investment decision, taking into account the fact that each component of the income stream becomes available at a different point in time) depends on a number of elements – among them, the interest (or discount) rate, the anticipated useful life of the capital goods, taxes, depreciation, available subsidies, and the regulatory regime. If, all things considered, the present value of the expected revenue stream is less than the initial capital outlay, the project is unlikely to go ahead. Another way of looking at these considerations is to compare the cost of obtaining the initial funds (through borrowing or equity financing) with the rate of return required to balance the initial cost with the present value of the expected income stream. If the cost of funds exceeds this internal rate of return, the

Chart 3-6

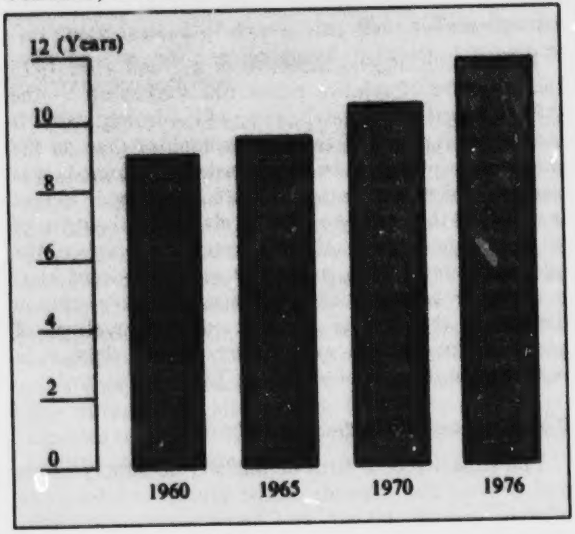
Sex Profile of the Labour Force, Canada, 1961 and 1982



SOURCE Appendix Table B-6.

Chart 3-7

Median Years of Schooling of the Labour Force (15 and Over), Canada, Selected Years, 1960-76



SOURCE Appendix Table B-7.

project will not be started. Projects with higher internal rates of return will be undertaken before those with lower internal rates.

The most straightforward criterion – one that is used frequently in projects with long economic lives (say five to ten years or more) – is the number of years needed for "payback" compared with the economic life of the investment project. Payback is the period of time required for the present value of the expected income stream to equal the initial capital outlay. If the years to payback exceed the economic life of the project, then it is unlikely that the latter will be undertaken.

However the decision to invest is viewed, it is based on an implicit judgment about the unit rental price of capital. The value (or price) of capital services is sensitive to the balance struck between the present value of the expected income stream and the initial outlay.

Canada's capital stock is an amalgam of many different projects, each with its own payback period and internal rate of return – and thus each with its own capital "rental price." But capital rental prices are unlikely to vary as much as wage rates, because capital markets are much more competitive than labour markets. If we do not distinguish between the higher and lower rental prices, then we cannot separate from TFP growth that part of the overall growth in supply that should properly be attributed to capital. Because of the bunching of the capital rental prices, however, we expect the adjustment would be small – smaller than that made to labour input.

In any event, there are other issues that concern capital and its role in the growth of supply. For example, the adoption rate of best-practice technology could tail off, and the level of best practice contained in the measured capital stock could decline as a result.

Such a drop in the adoption rate may explain some of the reduction in TFP growth after 1973. In fact, the reservoir of yet-to-be-adopted, best-practice technology might have been depleted because the incentives needed to bring new methods from the research to the development stage, and then on into use, were less attractive after 1973.

Price is the biggest incentive of all, and after 1973 the structure of relative prices was shaken up by the OPEC decision to raise the price of oil dramatically. It is likely that much of the new technology then on the sidelines, waiting to be developed and adopted, was energy- and capital-using, and labour-saving.[11] If that was indeed the case, then the escalation in the price of oil and òther raw materials may have curbed the adoption rate of what, until then, was considered best-practice technology. The result would have been a decline in the rate of increase in the "quality" of capital. This decline would show in our data as a reduction in the rate of growth of TFP.

The Structure of Production and Costs

The capacity of a firm or industry to supply goods and services also depends on the successful interaction of management, labour, and technology – the synergism of the production process. The degree of success with which this interaction is achieved – as represented by TFP growth – can, as we have seen, be measured using either production or cost data.[12] The end result is the same. It becomes apparent that the TFP framework ties everything together: growth in real wages, growth in output per person, and growth in the capital/output ratio all interact with the increase in total factor productivity. And increases in TFP depend on advancing skill levels and the rate of adoption of new methods.

Beyond that, economies of scale also play a role, as do the relationship between output and the intensity with which resources are used, the connection between those utilization rates and technical progress, and the relationship between technical progress and the relative prices of production factors.

The Scale and Scope of Operations

Whether a business benefits from scale economies depends on its cost structure – i.e., on whether its unit costs are reduced as its output expands. In this context, TFP growth is the difference between the growth of unit production costs and the growth of an input price composite. And changes in the unit production costs, which are themselves directly related to output, are related to changes in the scale of operations. These linkages are illustrated in the following examples.

If the ratio of the average cost of production to the extra cost of producing an additional unit is higher than 1, then as output expands, the average cost will decline. In these circumstances, scale economies can be exploited if an assembly line produces more cars, an airline sells more seats, a dam produces more power, or a law office takes on more cases. This will lead to lower prices in the marketplace or higher pay or profits in the workplace. Either way, higher real incomes will result.

If the incremental cost is the same as the average cost, the returns to scale are constant. Under these circumstances, output expansion does not produce dividends, nor is it burdensome, as the average cost remains the same when output levels change.

If incremental costs drift higher than the average cost, however, a burdensome situation results. Expanding output then leads to a higher average cost. Given such a cost structure, it would pay to increase the size of production facilities in order to regain the advantage of increasing returns. This longer-run approach would compensate for any short-run or temporary increase in unit production costs resulting from market demand that might exceed the short-run capabilities of existing production facilities.

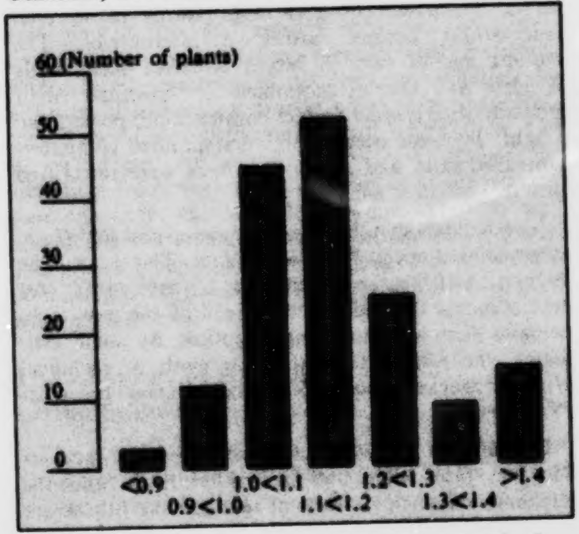
For national TFP growth, scale advantages cut two ways. On the one hand, large drops in output lead to greater than proportional increases in unit costs. Among other things, fixed costs must be covered regardless of the direction of the change in output. Consequently, TFP growth would be less than under more favourable circumstances. That is precisely what happened in the late 1970s and early 1980s: the gap between actual and potential output widened; capacity utilization rates declined; and the benefits associated with peak operating rates vanished. The evidence suggests that more than half the reduction in the rate of growth of TFP can be traced to the influence of these factors (Appendix Tables B-9 and B-10).[13]

The other half of the scale-advantage story at the national level is more upbeat. If there were cost advantages initially, the chances are they are still there. Gaining access to a large expanding market through increased trade is one way of drawing on the latent beneficial characteristics of this cost structure. That is the route that many are now urging for Canada, and it is one that this Council has supported in the past.[14]

Recent evidence on scale economies strengthens this point of view. The results for individual plants within the manufacturing sector are of particular interest (Chart 3-8 and Appendix Tables B-11 and B-12).[15] Using a U.S. benchmark as a proxy for minimum efficient size, a comparison of groups of plants and establishments in 125 Canadian and U.S. manufacturing industries reveals a gap in size of about 30 per cent in favour of U.S. plants. The detailed results coincide with one's *a priori* judgment as to the areas where Canadian manufacturing has the edge. The industries considered less competitive internationally – leather, textiles, knitting, clothing, furniture, and electrical products – congregate at the low end of the plant-scale spectrum. Those which are in a better position in international markets – wood, paper, metals, and transportation equipment – fare better in the area of scale economies.

Chart 3-8

Distribution of Average Returns to Scale of Manufacturing Plants, Canada, 1970 and 1979[1]



[1] The ranges indicated are estimates of the returns to scale of four-digit industries for 1970 and 1979 combined. The concept of returns to scale refers to the relationship between changes in inputs and the consequent change in output. If all inputs increase by x per cent and output increases by the same proportion, then there are constant returns to scale (1.0). If output increases by a proportion greater than x per cent, then there are increasing returns to scale (greater than 1.0). If output increases by less than x per cent, then there are decreasing returns to scale (less than 1.0).

SOURCE Appendix Table B-12.

A more detailed analysis suggests that access to larger Canadian markets results in Canadian plants moving upward in the relative-plant-scale index. Furthermore, higher tariffs are associated with smaller plant size in Canada relative to the United States, but only in industries that are highly concentrated. In such industries, a tariff reduction leads to an increase in plant scale in Canada relative to the United States. Thus the extent of Canadian participation in international markets, combined with Canadian comparative advantage, leads to increased plant scale. By contrast, industries facing tough import competition have smaller plants relative to their U.S. counterparts. Moreover, these smaller plants specialize in fewer products, instead of diversifying their output to offset the loss in scale experienced in their low-volume, primary product lines.

Even if the same technology is utilized on both sides of the border and if economies of scale are present, plants in the country with the smaller market may be faced with higher unit costs. Nonetheless, scale-corrected Canada/U.S. differences in total factor productivity should be smaller than those which are uncorrected for scale. The question is: How much smaller? Our results suggest that, uncorrected for scale, the difference for our matched sample could be as much as 25 per cent. About one-third of this difference might be accounted for by scale and plant-size differences; this suggests that scale may play a significant role in differences in TFP between Canada and the United States.

Substitution

If workers have more tools, more technology, and more materials to work with – i.e., if the ratio of capital to labour increases – then output per person will rise faster than TFP. As we have seen, this is what happened in Canada over the past two decades, and the same situation prevailed in individual industries.

What factors lead producers to substitute one input for another? The prime motivation, naturally, is to reduce their costs. But changes in the relative prices of inputs will not play a very important role in this respect if there is no real scope to change production methods. TFP growth and the growth of single-factor productivity will then rise in line. If there is some leeway to change production methods, however, then price changes may lead producers to alter the mix of inputs. That could also happen as a result of bottlenecks and imbalances in supplier markets. For example, if capital constraints of some kind exist, it may be necessary to resort to more shift and overtime work in order to increase output, leading to more intensive use of the available plant and machinery. Similarly, a significant drop in output, such as occurred in 1982, could lead to short-run labour hoarding and a decline in measured labour productivity over and above that induced by smaller scale.

Since 1973 Canada has witnessed important changes in relative prices, three periods of slow output growth, and two periods of wage and price controls (one in the mid-1970s and the other during the 6-and-5 program of the early 1980s). The short-run response to these situations, in terms of the changing mix in production factors, helps to explain the variations that occurred in the relative productivity of individual factors. More fundamentally, by what indirect route do changes in relative prices affect TFP growth? What makes a plant manager substitute a new method for an old one or a new skill for an old skill? The factors that influence this type of decision are the key to growth in TFP.

TFP, Technical Progress, and Relative Price Change

When a new technology or process comes along, it tends to be adopted by industry if it conserves the use of expensive inputs and exploits more abundant, less expensive factors in the production process. For the most part, technology already developed but not yet widely adopted has been heavily influenced by the relative-price environment that its designers expected it to face. That is why, in part, it has a competitive edge over older technology in an unchanged pricing environment.

Consider the technology of the early 1970s. Much of it was based on the widely accepted notion that raw materials in general, and energy in particular, would always be cheap. Hence the large cars, the tall buildings with sealed windows, and so on – a whole range of capital and consumer goods based on, or fueled by, oil or petrochemicals. The sudden increase in oil prices and in other raw-material prices shattered many of these ideas, and unanticipated costs (not just acquisition and installation costs, but also the costs of operation and maintenance) made many projects uneconomic before they were even finished. Another example is that of the nuclear-power industry, where market realities have turned out to be very different from the expectations of designers and planners, especially in the United States.

New technologies influence the structures of production and costs in various ways. Some call for the same input mix but use less of everything, but others are biased against one input or another. They can be either factor-using or factor-saving.[16]

In a period during which important changes in relative prices occur, whether a technology is factor-using or factor-saving and whether factors themselves are substitutes or complements have a bearing on the rate at which newer technology is adopted. And new technology awaiting adoption in the early 1970s used precisely those inputs for which relative prices were to increase during the post-1973 period (Appendix Tables B-13 and B-14). Thus it was initially unsuited for the post-1973 price environment.

Consumers took a hard look at everything from big cars to the temperature of their homes, and businesses took a hard look at the use of energy in offices and plants. Postponement and other forms of lowered expectations became attractive alternatives. The average age of cars in North America rose, while Windsor and Detroit scrambled to "downsize" their products with respect to fuel consumption, power, and weight. Japanese ocean freighters sprouted computer-controlled sails, and modern airliners were retrofitted with fuel-efficient engines.

New technology takes time to develop and to diffuse, as we pointed out in *The Bottom Line*. The lags can be as long as 10 years. Under those circumstances, cost developments thinned out the ranks of the new technologies that were awaiting adoption. By some estimates, the fall in the rate of growth of technical progress reached about 25 per cent during the post-1973 period.[17]

Labour and skill, capital, "best practice" and its adoption rate, scale and utilization rates, and the efficiency-enhancing effects of reallocation – those are the areas where the problems of reduced growth in living standards occurred in the late 1970s and early 1980s. Those are the areas where future improvement must take place.

4 Productivity: Analysis of the Slowdown

The discussion of the core issues in productivity analysis is revealing, but does it tell the whole story behind the fall in the growth of real per capita income after 1973? What about the role of the terms of trade, dependency rates, employment rates, participation rates, and the like? How does the Canadian experience compare with that of other countries? What about specific areas like health, safety and emission-control standards, trade protectionism in its various forms, union and management practices, human-resource management, tax and subsidy schemes, the underground economy, statistical measurement problems, patent rates, research and development spending, the diffusion of technology, worker effort, capital obsolescence, regulation, distortions caused by inflation, and so on? Here, an interpretation from outside the analytical framework of total factor productivity may have the edge, in that a less formal approach may provide a better view and help to map out better policy. The evidence must be taken and judged as it comes – perhaps less objective, but equally effective if good sense prevails.

The Anatomy of Growth in Living Standards

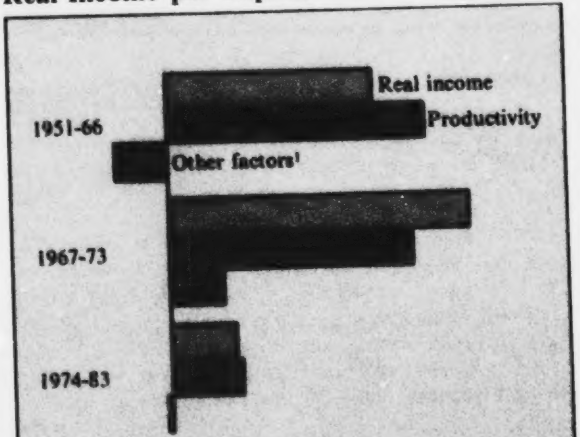
The postwar era brought Canadians a standard of living second only to that of the United States and one or two other OECD countries. Growth in living standards (as measured by nominal GNP, divided by the price of final expenditures and divided again by population) was about 3 per cent a year during the 25-year period prior to 1973. This meant that by the early 1970s Canadians as individuals had more than doubled their command over goods and services, relative to the late 1940s. There is some doubt whether it will be possible, in the year 2000, to say the same about the subsequent 25-year period.

The most important factor in the post-1973 decline in labour productivity growth has been the poor performance of growth in total factor productivity; moreover, there is, as we shall see, a straightforward link between growth in labour productivity and growth in living standards. That relationship between TFP, labour productivity, and living standards provides a focus for policy: to re-establish growth in living standards, we must nudge TFP growth upward. But are there factors other than TFP growth that influence growth in living standards?

Aside from the link between TFP and labour productivity, growth in real per capita income can change if more people become engaged in productive effort. That is what happened during the postwar period (Chart 4-1 and Appendix Table C-1). A number of factors induced the changes that occurred. First, the number of potential entrants to the labour force rose as the "baby boomers" came of age and the proportion of the population under 15 declined. Changes in that proportion continued even after 1973. But those changes, both before and after 1973, enhanced, rather than detracted from, our capacity to produce. Second, the influx of women into the labour force in the 1960s and 1970s had a similar effect. In many instances, that influx increased the number of workers per household. Income per household rose more rapidly than the more traditional measure – income per capita – and this had a favourable impact

Chart 4-1

Factors Contributing to Growth in Real Income per Capita, Canada, 1951-83



1 Other factors include the contributions of the participation rate, the employment rate, the reduction in the dependency rate, average hours, relative prices, and national income relative to domestic output.

SOURCE Appendix Table C-1.

on the standard of living of households. The result has been that our capacity to produce has expanded over the whole period since the late 1940s. The major problem has been that since 1973 a lot more of us have had problems finding work, especially since the deep recession in 1981-82. The higher average unemployment rate has meant lost production, and that has meant less growth in real income per capita, compared with the pre-1973 experience.

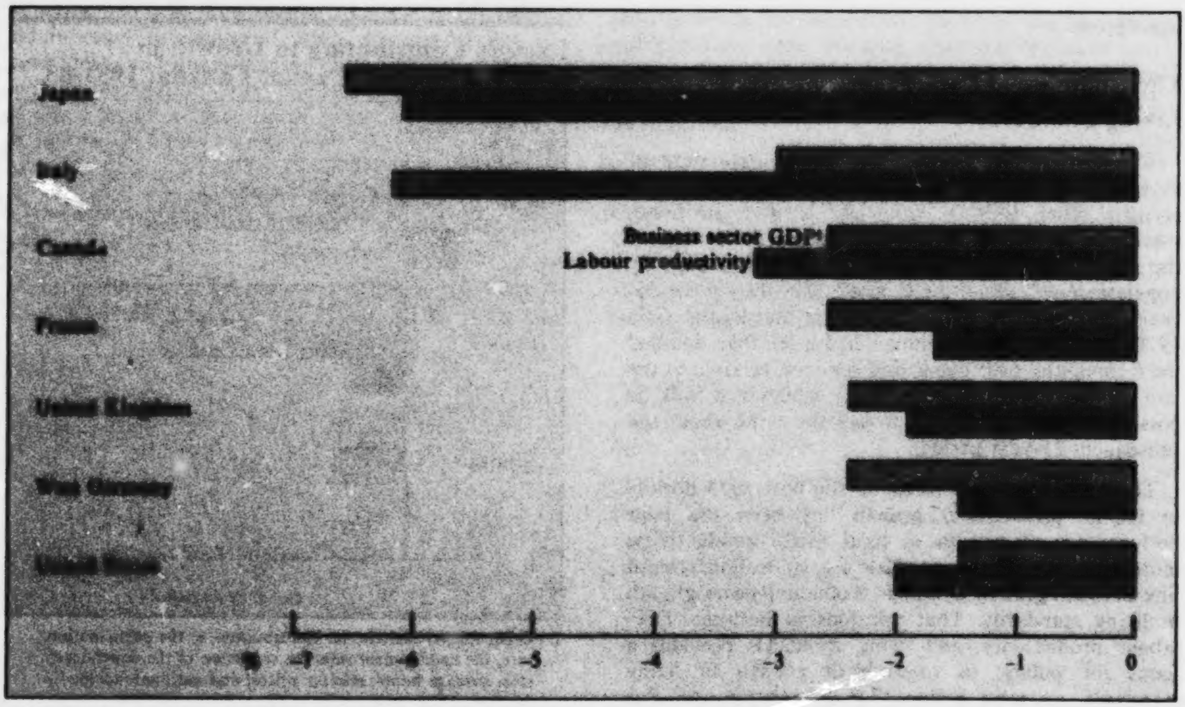
Because Canada's is an open economy, growth in real incomes is also influenced by trade prices and by the extent to which income that originates in the country finds its way into the hands of Canadians. The higher the growth of export prices relative to import prices and the higher the percentage of income originating in Canada that remains in Canada, the better off we are. These effects can be important in the short run, especially during a commodity price boom such as occurred in 1972-73; in the 10-year period both before and after 1973, terms-of-trade changes made only a small contribution to the change in the welfare of Canadians. Gains from the terms of trade are often transitory, and they have had little or no impact on per capita income growth rates over the long term. Finally, Canadians have chosen to work shorter hours since the late 1940s – a trend that has not changed significantly since 1973. In short, the story of growth in living standards is largely that of TFP growth.

The International Perspective

The slowdown in growth in total factor productivity and in real per capita income was not confined to Canada. Other major industrialized countries also faced similar problems (Chart 4-2 and Appendix Table C-2). Although the correlation was not perfect, the TFP slowdown was clearly a major factor in the erosion of real income gains in other OECD countries.

Chart 4-2

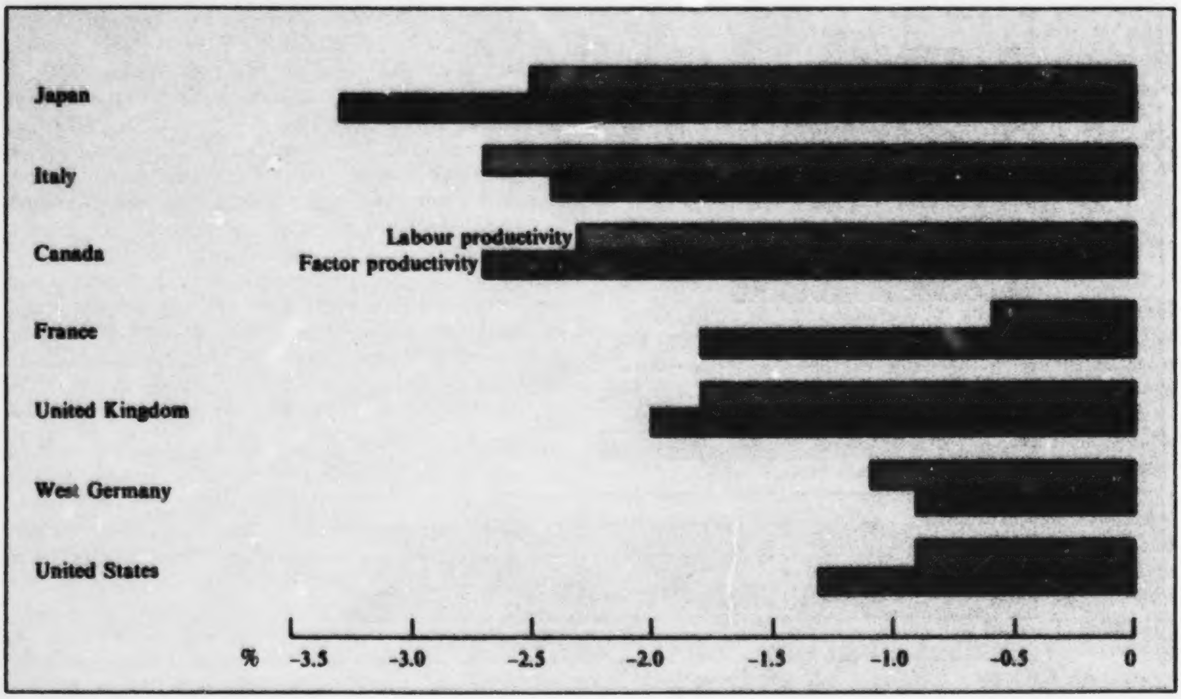
Change in Average Annual Growth Rates of Business Sector Indicators, Seven OECD Countries, 1960-73/1974-79



1 Excludes government, households, and nonprofit organizations.
SOURCE Appendix Table C-2.

Chart 4-3

Change in Average Annual Growth Rates of Productivity in Manufacturing, Seven OECD Countries, 1955-73/1974-80



SOURCE Appendix Table C-3.

Changes in favour of the use of more labour and less capital, while less important in Canada, were a factor in the slowdown in the growth of labour productivity internationally. The decline in TFP growth and the slowdown in capital spending (except in Canada) were both important factors contributing to the slowdown in labour productivity growth.[1]

The slowdown is also evident within manufacturing for these same countries (Chart 4-3 and Appendix Table C-3), although after 1973 it was less pronounced than for the business sector as a whole. Once again, the close relationship between labour productivity and TFP growth is confirmed. Beyond manufacturing, the slowdown was observed in agriculture, mining, utilities, construction, commerce, transportation, and services (Appendix Table C-4). Because no data are available on TFP growth for more recent years and because TFP and labour productivity growth are related, we rely on labour productivity growth for a look at the last few years (Appendix Table C-5). For most OECD countries, there was not much improvement during the early part of the 1980s, but both 1983 and 1984 were good years for many countries, including Canada. It is still too early, however, to determine whether this improvement is cyclical or the beginning of a new trend.[2]

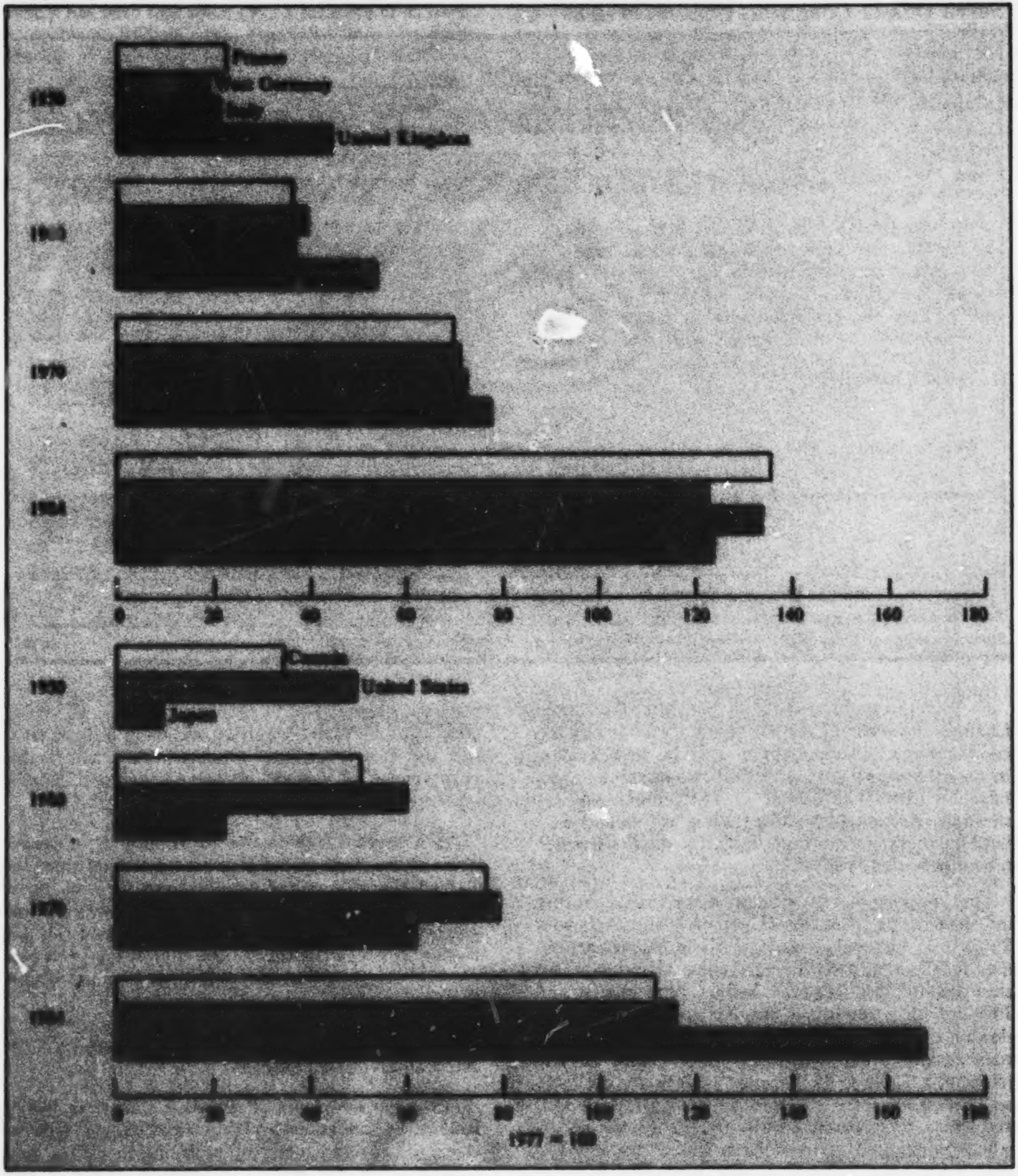
As a result of the more rapid growth in labour productivity in many industrialized countries since the Second World War, the gaps between those countries and the United States have narrowed (Chart 4-4 and Appendix Table C-6). Some have argued that this gap closing has contributed to the slowdown in labour productivity growth in countries other than the United States.

Measurement Problems

Is the slowdown in TFP growth a statistical illusion caused by measurement problems? Some analysts think so. For measurement problems to play a role, however, they must lead to an underestimation of TFP growth, and they must have increased in importance after 1973. Although the direction of the measurement

Chart 4-4

Output per Hour in Manufacturing, Seven OECD Countries, 1950-84



SOURCE Appendix Table C-6.

bias is indisputable, there is little evidence to show that the bias has become more significant in recent years.

For output, two types of measurement problems are important. For some parts of the economy – the service sector, for example – real output is not measured directly, and input proxies are used instead. Some analysts assert that the overall slowdown can be explained by the experience of the service sector alone, because that sector is getting larger relative to the rest of the economy and because its TFP is either lower or growing more slowly. These two factors, however, are not sufficient to explain the slowdown. Another condition is that the service sector must also be growing more rapidly than in previous periods. As there is no evidence that the growth of the service sector accelerated after 1973, this factor does not contribute to the explanation of the productivity slowdown. A recent examination of this issue shows that the growth of the service sector can explain, at most, 15 to 20 per cent of the slowdown in TFP growth.[3]

A second problem on the output side lies in the inadequacy of some of the price deflators used to convert output measures from current dollars to constant dollars. These deflators omit or downplay some important classes of products – such as computers – that have experienced rapid technological change.[4] In short, they do not correctly account for quality change. Using as proxies the prices of more conventional products that have undergone less rapid technological change entails a systematic overstatement of the rate of price increase and a corresponding understatement of the growth in output. While these measurement biases are important, however, it is not clear that they have increased in importance since 1973.

The data on inputs present similar problems. The existing data on labour, for example, relate only to hours paid, as distinct from hours worked. Since most employees are not engaged in production when they are not at the workplace – i.e., when they are on paid holidays or sick leave, and so on – the concept of hours paid is not appropriate. If there has been a significant decline in hours worked relative to hours paid in recent years, then the use of the latter concept will tend to overestimate labour input, and part of the slowdown could then be attributed to measurement problems. But there is little evidence to suggest that the gap between hours paid and hours worked has widened more rapidly since 1973.

Measurement problems could also arise as a result of the tendency for person-hours to represent jobs that are not prorated for part-time or seasonal work, as is true for some Canadian employment data. As a result, a shift of workers from full-time to part-time status or from full-year to seasonal status, while it does not show up in the employment statistics, will have an effect on labour input and hence on TFP. For this effect to be important, there must be an increase in the rate of growth of part-time workers. The evidence shows, however, that prior to the 1981-82 recession this was not the case.[5]

With respect to capital, a key problem is that official capital stock estimates may not provide an accurate measure of the flow of capital services to the production process. For example, some estimates for the United States suggest that higher oil prices have led to a one-time capital obsolescence rate of 20 per cent.[6] If this was also true for Canada, it would lead to an overestimation of capital input and a decline in TFP growth.

Finally, another possible downward bias in official output measures may result from the growth of the underground economy. Supposedly, the disincentive caused by high marginal taxes encourages more goods and services to be exchanged outside the areas normally surveyed in preparing the national accounts. Increased barter and unreported income from a variety of sources are often cited as causing an underestimation of the quantity of goods and services produced. While recent evidence indicates that the importance of the underground economy ranges from 5 to 20 per cent of all economic activity in Canada,[7] the most relevant question in analysing the slowdown is whether the growth rate of these unrecorded transactions has increased during the post-1973 period. If the major cause of this growth is the increase in marginal income tax rates, then there is little reason why this activity should have expanded more rapidly during the post-1973 period, except that more people may have reached their "saturation point" and increasingly engaged in activities that go unrecorded in the national accounts framework. During the period 1974-81, as a result of the indexation of the personal tax system, the increase in total direct personal taxes as a proportion of total personal income slowed to 1.3 per cent a year, compared with the 4.9 per cent recorded annually for the 1961-73 period.

A Review of the Explanations

The explanations of the productivity slowdown can be grouped into five broad categories based on their essential features – capacity utilization, economies of scale, technical change, quality of inputs, and resource allocation.

Capacity Utilization

As we stated in Chapter 3, the relative roles of demand-side and supply-side factors are central to any explanation of the slowdown. After 1973 demand was more of a constraint on output than it had been previously. The quadrupling of the price of oil in 1973-74 depressed demand throughout the industrialized world and triggered a worldwide recession despite the easing of fiscal and monetary policy in many countries. In 1979-80 demand was again reduced by a substantial increase in the international price of oil. In addition, governments moved to restrain demand further in a determined effort to contain this second inflationary shock. Weak growth in demand after 1973 was reflected in lower levels of capacity utilization.

Granted that output was reduced by lack of demand, why did growth in labour productivity or TFP decline? One short-run explanation that has been advanced is based on the practice of labour hoarding. During a downswing, employment is not likely to decline as sharply as output in the short run, for two reasons. First, some labour can be viewed as an element of overhead; and, second, the costs of hiring and firing make it worthwhile for a firm to hold on to underemployed skilled labour and professionals as long as there is some prospect of an early recovery. For the post-1973 slowdown in Canada, the evidence in this respect is mixed. Although a Council study suggests that there was an increase in labour hoarding in 1974-75,[8] this finding is hard to reconcile with other evidence indicating that this was a period of rising labour demand.[9] Another reason offered for the longer-run depressing effect of slow-growing demand on labour productivity or TFP growth is that it discourages investment, innovation, the utilization of scale economies, and efficient resource allocation.[10]

Some analysts have linked the demand effect with energy price shocks. For example, the shocks of the early 1970s in raw-material and energy prices, in addition to creating a petrodollar-recycling problem, reduced demand in two ways – first, by reducing directly the real income of net energy-importing countries; and, second, by indirectly inducing central banks to adopt tight money measures in order to contain the resulting inflation, especially after the second oil price shock in 1979.[11] Both of these factors contributed to a slowing of demand, which in turn had a retarding effect on TFP growth (see estimates for selected OECD countries in Appendix Table C-7). According to one estimate, more than three-quarters of the slowdown in the United States and almost the entire slowdown in Canada were attributable to demand (or cyclical) factors.[12] If weak demand is the most important cause of the slowdown, then there are grounds for optimism about the prospects for a turnaround when demand strengthens.

Economies of Scale

It is equally important to consider the issue of economies of scale because of the direct bearing they can have on the prospects for improvement in TFP. Research at the Council, as well as elsewhere, has focused on the microeconomic nature of the scale issue. According to a study on the telecommunications industry done outside the Council, the utilization of scale economies played an important role in TFP growth at Bell Canada.[13] The study shows how the interaction of technological change, scale economies, and demand led to TFP improvements during the period 1953-80. For example, the revolution in switching technology, which started in the mid-1950s with the introduction of the first crossbar central offices and customer-dialed long-distance calls, resulted in large gains in TFP. In addition to these effects, technological change aided TFP improvement indirectly, not only by increasing the degree of economies of scale but also by generating an upsurge in the demand for long-distance services. As with any innovation, the effect of these economies increased initially but slacked off later.

While this work is current and interesting, the main emphasis of our research on scale economies has been on the Canadian manufacturing sector. A recent Council study examines the extent of scale economies in manufacturing, using a special data base developed for the Council by Statistics Canada.[14] The results suggest that during the period 1974-79, the degree of product diversity decreased and Canadian plants became much more specialized. The degree of specialization was more pronounced for larger plants.

Our research also examined the problem of plant scale economies.[15] Using a U.S. benchmark for minimum efficient size (MES), it found that only 17 per cent of all plants in the Canadian sample were of MES (or above MES) in 1970; the corresponding figure for 1979 was 20 per cent. These results suggest that a scale problem exists in Canadian manufacturing. Of the plants in the top half of the industry distribution – which includes all plants larger than the median plant, when ranked by employment size – 69 per cent were of MES in 1970 and 74 per cent in 1979. The problem of scale was much more serious for smaller plants. Among plants in the bottom half of the industry distribution, only 10 per cent were of MES in 1970 and only 12 per cent in 1979.

Technical Change

Many treat growth in labour productivity or in TFP as synonymous with technical change, the final stages of which entail the adoption of "best practice"; hence they believe that the slowdown is mainly the result of a deceleration in the rate of best-practice adoption. In Chapter 3 it was argued that technological change slowed after 1973 as a result of the explosion of energy and other raw-material prices and of the demand slowdown. The evidence suggests there were other reasons for the deceleration in technical change.

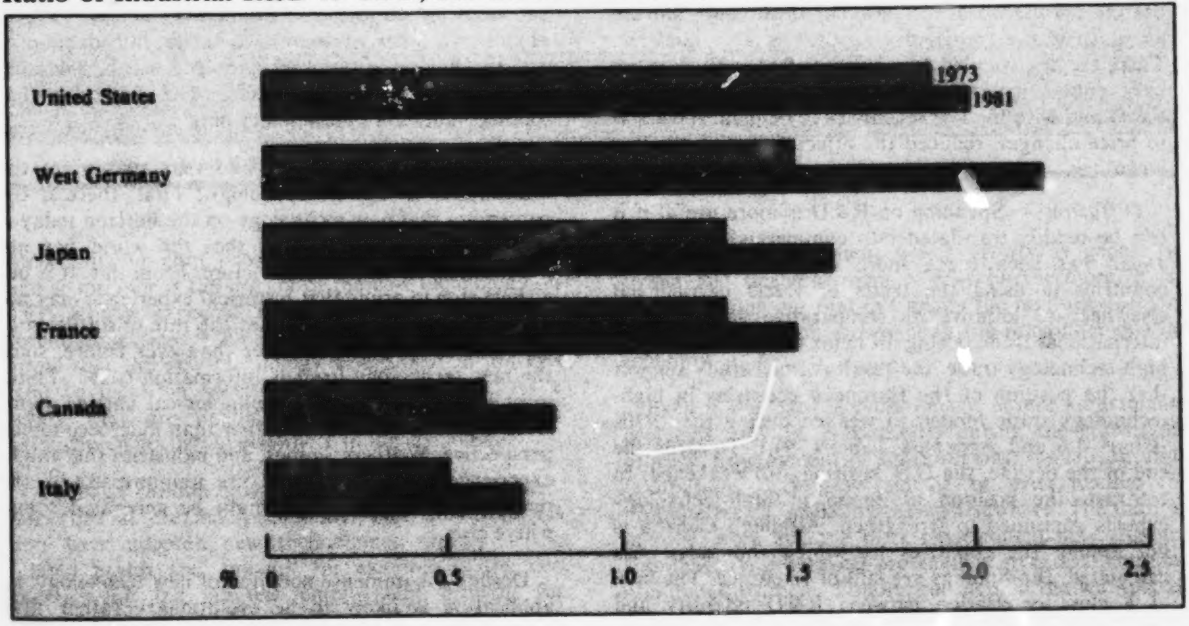
Technical change can be divided into three broad stages: invention, innovation, and diffusion. The first stage encompasses activities leading to the demonstration of the technical viability of a new product or process. The second stage covers activities spanning the whole range from the design and development of a prototype to the introduction of a new product or process into commercial use. The third stage corresponds to the period in which a newer technology displaces an older technology. In our discussion we shall deal only with the second and third stages. The issue of technological unemployment, which is related to technological diffusion, is also examined.

Innovation — There is scattered evidence that could be interpreted to suggest there has been a general decline in the rate of innovation. The patent rate in Canada, for example, reached a peak in 1972 and fell sharply thereafter to a low in 1975. Only recently has it climbed back to its 1960 level. Similarly, in the United States the patent rate has been falling since about 1969.[16] Additional evidence is provided by a recent study that found that, with the notable exception of Japan and West Germany, the number of patents per scientist and engineer declined between the late 1960s and 1970s.[17] This decline was attributed to a depletion in the pool of inventive possibilities. In interpreting these results, it is important to bear in mind that patent statistics are only a crude measure of the rate of innovation. The average importance of the patents granted at one time and place may differ widely from that of patents granted at another time and place. The proportion of the inventions that are patented may also vary significantly.

Another indicator often used to represent technological change is R&D spending. Although industrial R&D declined as a percentage of GDP in the United States in the 1970s from the level recorded during the 1960s, in most other countries (including Canada) the industrial R&D/GDP ratio remained stable or actually rose (Chart 4-5 and Appendix Table C-8). For these countries, there is no reason to believe that R&D spending, or the lack thereof, contributed to the slowdown. For the United States, the case is not as clear-cut. Some believe that reduced R&D spending was an important factor in the U.S. slowdown, while others feel that its role has been exaggerated. Some even suggest that the impact was in the other direction – i.e., that the productivity slowdown contributed to a decline in R&D spending.[18] Regardless of the relationship between R&D and the slowdown in the United

Chart 4-5

Ratio of Industrial R&D to GDP, Six OECD Countries, 1973 and 1981



Source Appendix Table C-8.

States, however, it is difficult to argue convincingly that the same relationship also existed at the international level, except in the case of the catch-up hypothesis.[19] Here it is argued that the decline in R&D spending in the United States contributed to the slowdown in other countries as less technological gap closing was needed in the 1970s than in the 1950s and 1960s.

In 1981 the share of GDP devoted to industrial R&D in Canada was much less than those proportions observed abroad. Interestingly enough, the relative unwillingness of Canadians to invest in R&D in 1981 cannot be attributed to a lack of tax incentives. In a recent study, a summary measure of the net tax incentive to engage in R&D was constructed for several countries.[20] Although the incentive to invest in R&D, as measured by this index, has decreased since 1973, the study concludes that Canada's tax treatment of R&D is still extremely generous by international standards. Only Singapore was found to provide a more favourable treatment.

A more recent study examines the impact of two Canadian tax incentives – the R&D investment tax credit of 1977, and the special research allowance introduced in 1978.[21] The former increased company-financed R&D by about 2 per cent, while the latter resulted in an increase of about 1 per cent annually from 1980 to 1983. Several reasons were given for the less-than-spectacular performance of these R&D tax incentives. For example, about one-third of the firms that do R&D did not have sufficient taxable income to use the tax credits at all. Another third could not use all of their tax credits during the years in question. These factors, coupled with the fact that tax incentives have only a modest effect on the after-tax price of R&D and with the low sensitivity of demand for R&D to price changes, reduced the effectiveness of the two incentives.

Diffusion — Spending on R&D is more useful if it can be readily translated into commercial advantage. Japan has been much more successful than other countries in using the fruits of R&D carried out elsewhere to improve its comparative advantage in international trade. Using an index of specialization in high-technology trade, the results of one study suggest that the position of the European countries in high-technology trade tended to weaken during the 1970s (Chart 4-6 and Appendix Table C-9).[22] Towards the end of the decade, the U.S. position also weakened. In contrast, the position of Japan in high-technology exports continued to strengthen. Although Canada is not among the countries for which the index was calculated, the findings are still of relevance. The lack of a close correlation between R&D intensity and success in exporting high technology could indicate that for many countries it is more important to follow the technical leader and adopt best-practice technology – which in most cases has been that of the United States – than to develop new technologies through R&D. If that is the case, then part of the productivity slowdown could be the result of a slowdown in the adoption rate of new technologies as the technology gap between the United States and other countries narrowed.[23]

Another factor that has some bearing on growth in labour productivity or TFP is the slow speed with which new technologies displace old ones. The importance of this point for Canada was emphasized in two recent Council studies dealing with the adoption of computer technology in the service industries.[24] The author found that although the computer was introduced into the Canadian insurance industry in 1956, fewer than 15 per cent of all insurance companies were using computers as late as 1969. Similar long lags in the adoption process were also reported for hospitals and university libraries. Another interesting finding regarding the speed of the diffusion process is that the Canadian subsidiaries of foreign corporations in many, though not all, cases adopt innovations sooner than their Canadian-owned counterparts.[25]

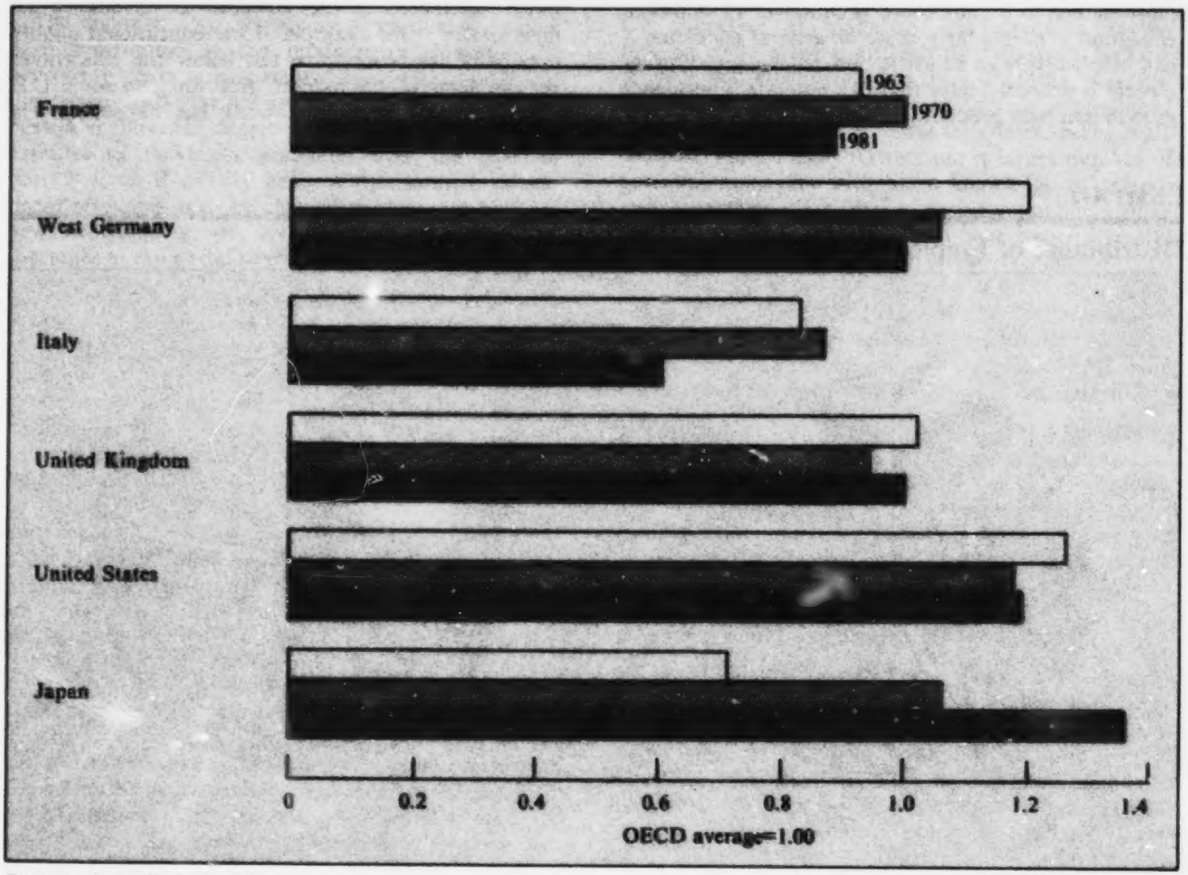
Technological Unemployment — Technological change could be slow and difficult without cooperation between workers and management. One factor that may stand in the way of such cooperation is the alarmist reaction to the introduction of innovations and the fear of workers that the use of newer technology will result in job loss. The Council is currently looking at this and other issues related to the introduction of new technology in the workplace and will be releasing a report on it at a future date. The discussion that follows is therefore preliminary only.

What causes the unease and fear that greet the introduction of newer technology? First, there is the perception that new technology on the horizon today is revolutionary in nature and that the world has not experienced anything like it before. From this, it is but a short step to argue that historical experience may not apply. Second, it is feared that the rate of diffusion of new technology may be faster than ever before, since the new technology itself is information-based. Third, most of the resistance to technological change stems from a partial or sectoral, rather than macroeconomic, perspective. Workers, unions, and industries that might experience job displacement are unimpressed by the possibility that more jobs might be generated somewhere else.

Despite the immense potential of new technology, its application is likely to be evolutionary rather than revolutionary for a variety of reasons, including diffusion rates that are less than anticipated, capacity

Chart 4-6

Index of Specialization in High-Technology Trade, Six OECD Countries, 1963, 1970, and 1981



SOURCE Appendix Table C-9.

constraints in chip production, software limitations, and so on. Nor is the impact of the new technology on TFP growth expected to be dramatic, judging by recent projections.[26] Finally, most of the studies that argue that the new technology would lead to job loss tend to focus on specific firms or industries. As a result, they are unable to capture the growth of employment occurring elsewhere in the economy.[27]

Although caution is warranted when making generalizations at the macroeconomic level, the countries that have adopted new technologies rapidly – the United States and Japan,[28] for example – are also experiencing the greatest employment growth, for reasons that are not necessarily related to the adoption of these innovations. Thus adoption is certainly facilitated in an environment where growth is generally strong and unemployment is low. Furthermore, it is worth pointing out that in Canada the high-tech sector has had greater job growth than the remainder of the economy.

Even if the pace is evolutionary, severe adjustment problems may be encountered during the transition process. Employment in some regions, industries, and occupations may grow slowly, or even decline in absolute terms, while increasing elsewhere. The nature of some work and the work environment may change significantly, generating problems of worker alienation and maladjustment. Finally, conflicts in the workplace may arise over control of the new technology, and the industrial relations system could be put to a severe test.

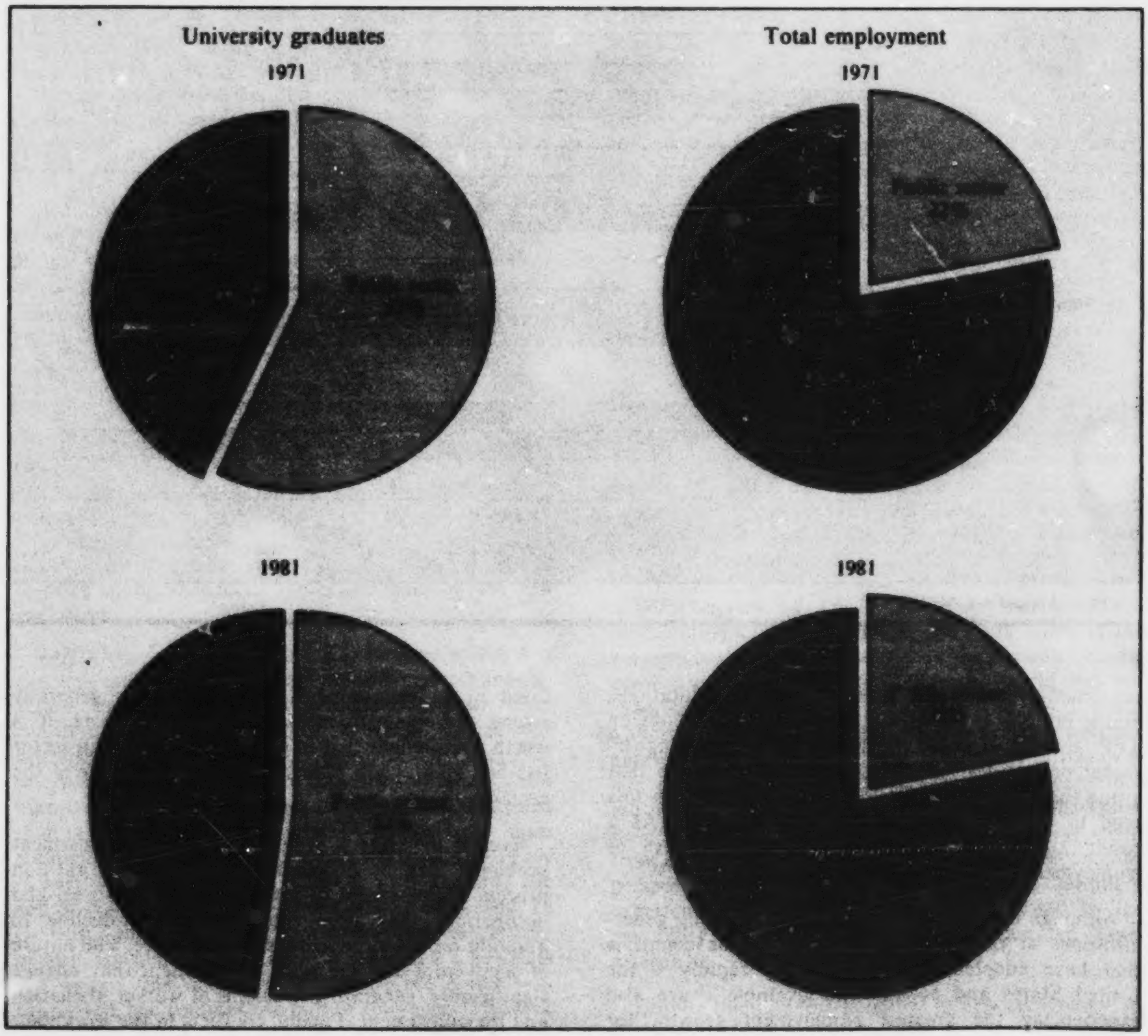
The Quality of Inputs

Labour — Expenditures on education, training, and health can raise labour productivity and/or TFP growth. With education and training, workers become more skilled and thus more productive. In addition, education – particularly basic or general education – can help workers to adjust to new technology. Worker morale is another factor that can potentially influence growth in labour productivity and/or TFP.

Education — In Chapter 3 we presented some evidence that indicates that the productivity slowdown is not due to a decline in the educational level of the work force. However, it is still possible for education to have contributed to the slowdown if its quality has deteriorated – for example, if the educational qualifications of the work force fall below the educational requirements of the market. According to some U.S. observers, that is exactly what has happened. The

Chart 4-7

Distribution of Employment, Canada, 1971 and 1981



Source Appendix Table C-10.

decline in scores on standardized college entrance tests in the United States is often cited to support the contention that there has been a decline in the quality of new entrants to the labour force.[29]

The opposite – an oversupply of graduates – could have contributed to the productivity slowdown by depressing the economic returns from education.[30] But these arguments may not apply to Canada, as there has been a remarkable degree of stability in the relative earnings of university graduates over the past 40 years.[31] Even if quality has not deteriorated, educational resources must be channeled into areas that are now experiencing, or are expected to experience, shortages in skills vital to the economy.

In Canada the principal employer of university graduates has been, and still is, the public sector (Chart 4-7 and Appendix Table C-10). The growth of employment opportunities in that sector affects university enrolment trends and the type of degree that students seek to obtain.[32] This is in sharp contrast to the U.S. record, where the main source of employment for university graduates is the private sector and where university education is geared mainly to the needs of that sector.[33] In Canada, the growth of the public sector has slowed down since the late 1970s, while the commercial sector has expanded. Students have anticipated some of these changes by shifting their course selection patterns towards skills needed by the private sector.

Despite these changes, some skill shortages continue. This is true not only for university graduates but for the educational system in general. A good illustration of past problems created by skill shortages is provided by a Council study on electronic data processing, which found that a shortage of systems analysts and programmers restricted the spread of computerization in the 1970s.[34] According to that study, public-sector educational institutions were slow to respond to the increased demand for data-processing training programs and computer science curricula.

Occupational forecasting is important for educational planning. As some have warned, however, there are dangers in trying to fine-tune the educational system to meet forecast occupational demands.[35] Because of the pitfalls in forecasting, there are advantages to maintaining a degree of flexibility in educational planning.

Management Education — The quality of management education is another issue. Concern has been expressed in the United States over the low calibre of newly trained managers. Some observers contend that the Canadian situation is even worse than that in the United States.[36] Canadian managers reportedly are older, less educated, and less innovative, on average, than their American counterparts. In addition, in Canada more emphasis is placed on seniority and experience and less on formal training and initiative.

While the problem may stem from the approach to the education of managers, inadequate university funding could make it difficult for business schools to produce better-educated managers. Funding, however, may be only part of the problem. Success in producing managers who will be at home in today's increasingly complex world means turning out a larger number of potential managers with more knowledge of science and technology as it relates to business practice. Unlike the U.S. business schools, which have been successful in creating a balance between science, technology, and management, Canadian business schools have only begun to do so recently. Part of the problem, some feel, is that there is not enough trained personnel to teach disciplines such as computer-based production and operations management, office automation, and so on.

Training — In addition to formal education, training and work experience are also important factors that influence growth in labour productivity and/or TFP. In its most recent report on the labour force, the Council examined Canadian training programs and suggested that resources should be channeled to the training of skills that are in rising demand.[37] That is precisely what the National Training Act of 1982 attempted to do.

However, for the Act's target population – young labour-force entrants without established skills – heavy emphasis was placed on the training of specific skills, and general training was de-emphasized. Under these circumstances, the opportunity for individuals to achieve a high degree of flexibility and occupational mobility is reduced. That is unfortunate because a key objective of training and, for that matter, retraining should be to ease adjustment to economic change. Training not only helps workers to acquire that first skill, but it also helps those who lose their jobs because of trade liberalization or technological change to find alternative employment.

The problem of reduced flexibility can be corrected to some extent by placing more emphasis on generic skills. There is generally a considerable degree of overlapping of skills. By tailoring training systems to a cluster of skills rather than a single skill, it may be easier to move workers from "surplus" to "deficit" trades. On the other hand, educational and training programs may not be of much interest to workers unless there is reasonable assurance of employment or re-employment after training. For education and training programs to be successful, the economy must be creating jobs through sustained expansion.

Worker Effort — The interaction of the social and technical environment of the workplace may be a factor in the productivity slowdown.[38] Some argue that the traditional methods of "line control" (where decisions come from management) have slowly come to be viewed as less attractive than a strategy of commitment on the part of both labour and management. In some cases, the line-control approach broke down before these new relationships could evolve usefully. In fact, this evolutionary stage is still under way. It is difficult to assess the relative importance of factors like this in the slowdown because of the lack of hard evidence. For the slowdown, worker attitudes are seen by many as merely a response to a more critical factor – namely, counterproductive labour-management interaction on the plant floor, based on a system of centralized, management-controlled bureaucracy. In its place should be put, as circumstances permit, participatory and democratic decision-making. For example, a recent Canadian survey revealed a general increase in absenteeism and a decline in job satisfaction, which was attributed to deteriorating advancement opportunities and reduced worker influence in the affairs of the firm.[39]

There have also been frequent discussions on the role of unions in curtailing labour productivity and TFP growth, in particular because they can influence the rules of the marketplace. Canada's industrial relations record is often cited in such discussions, but in fact the evidence is inconclusive. For example, Canadian work stoppages have been less frequent but longer than in other OECD countries, and the record of the private sector has been much better than that of the public sector. The only Canadian study on this subject found that unions have both favourable and unfavourable effects, and that these effects tend to cancel out.[40] In the United States, a recent study came out strongly in support of the argument that unions have a relatively favourable impact on labour productivity.[41]

Human-Resource Management — Effective human-resource management can enhance worker performance, but the Canadian situation is not without problems.[42] For example, some personnel policies and practices in Canada are *ad hoc* in nature and are determined at lower organizational levels, while others, such as those dealing with compensation and related matters, are formulated, determined, and carried out at higher organizational levels and rarely involve the participation of personnel departments. The result has been a failure in the planning, training, and development of human resources, which has led to poor worker morale.

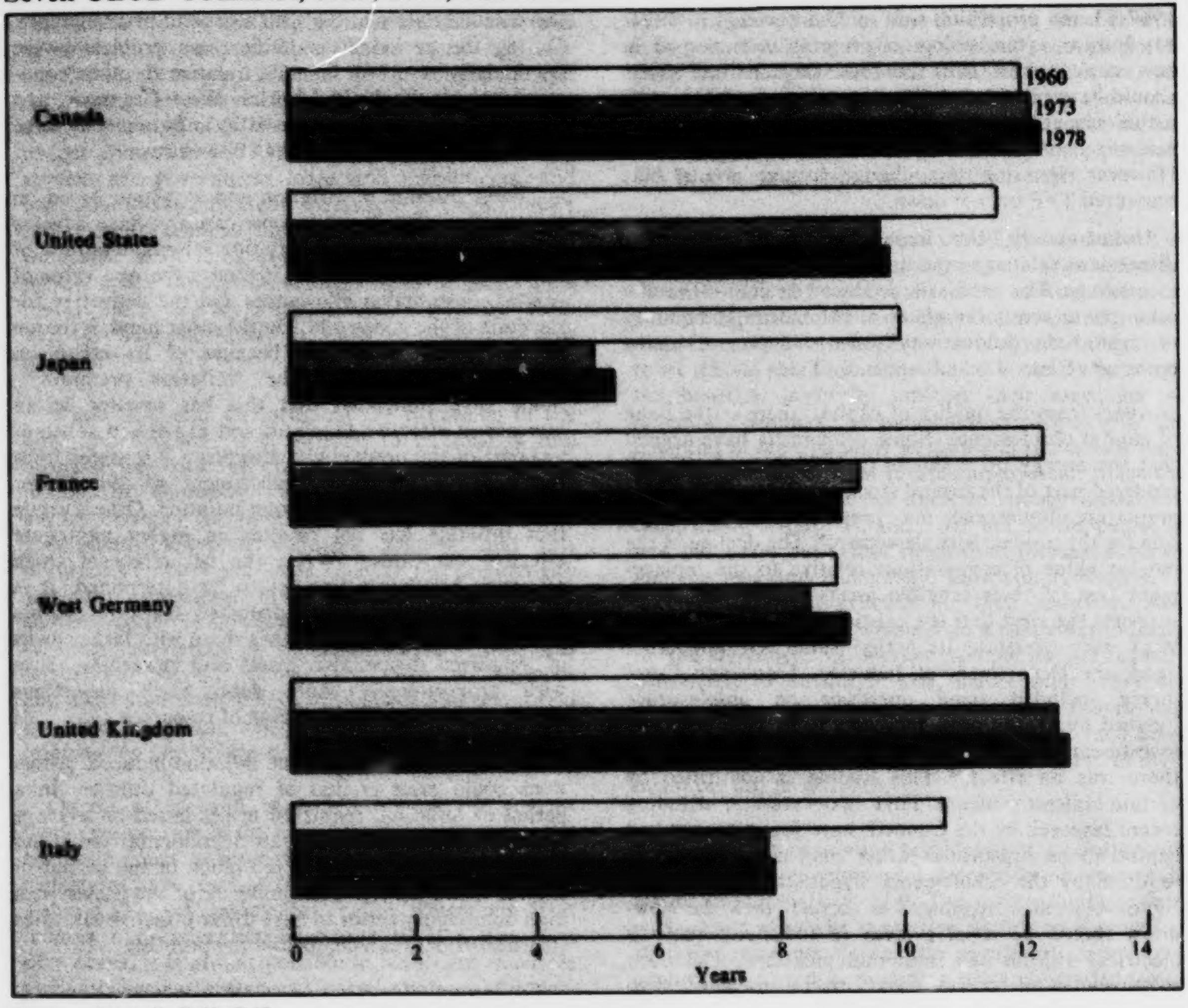
Training and adjustment policies have already been discussed. Beyond those measures, changing the approach to organizing work, as well as greater cooperation between labour and management, offers promise and underlines the need to reassess the roles of workers, management, and unions. Such approaches include quality-of-working-life (QWL) programs. The QWL programs include autonomous work teams, job enrichment, job expansion or rotation programs, and feedback mechanisms such as "quality circles." A recent survey by the New York Stock Exchange on human-resource programs found that companies give high marks to the QWL approach.[43] But the labour movement has come to view QWL in many cases as a means used by management to tip the balance of power in its own favour. Under the banner of QWL, unions have often seen traditional protections eroded, collective bargaining sidestepped, production speedups, and increased surveillance of workers. If the QWL approach is to succeed, labour must be made a full partner in innovative organizational approaches. The key concept is "participatory" decision-making rather than "cooperation"; too often, the latter has meant getting labour to go along with management-developed programs that, in the final analysis, have not democratized decision making and offered little of substance to workers.

Another innovation in human-resource management is gain sharing. In addition to the possibility of boosting worker morale, gain sharing is purported to have the advantage of increasing flexibility to changes in economic conditions. By making compensation more flexible, gain sharing could reduce layoffs and cutbacks in hours worked. The New York Stock Exchange survey cited above indicated that over 70 per cent of firms with productivity-sharing and/or profit-sharing plans report success in improving performance (Appendix Table C-11). The Canadian experience with gain sharing is much more limited, but recent evidence suggests that gain sharing has met with some success in this country, particularly in high-growth industries.[44] While a compensation package where gain sharing replaces some amount of wages is more flexible, it does pose industrial-relations problems in at least two areas. First, it creates earnings uncertainty for workers who, for a variety of reasons, tend not to be risk takers. Second, it ties their compensation to productivity gains over which, in most companies, workers may have only a marginal influence. Where gain sharing is accompanied by participatory decision-making – so that workers can exert some control over the factors affecting their earnings – the attitude of labour tends to be much more favourable.

Capital — As already noted, the productivity slowdown in Canada cannot be attributed to lack of growth in capital. That was not necessarily the case for other OECD countries. For example, in its most recent look at the world economy, the International Monetary Fund indicates that "capital-deepening" efforts – i.e., efforts to increase the capital/labour ratio – slowed during the period 1973-79, compared with the period 1960-73, particularly in the United States, Japan, and

Chart 4-8

Average Age of Real Fixed Capital Stock in Private Nonfarm Economies, Seven OECD Countries, 1960, 1973, and 1978



SOURCE Appendix Table C-12.

Italy: "The data on real rates of growth in private nonresidential capital stocks of the respective countries indicate clearly that increases in amounts of capital per worker were appreciably lower (except in Canada) during the period after 1973 than during the preceding 13 years. This difference in the pace of capital deepening was especially marked in Japan, where the process of adaptation to modern industrial technology, which had been particularly rapid in the earlier period, tapered off as it approached more or less full realization in the second half of the 1970s."[45] Aside from the value of capital, however, there is the question of the role of the allocation and quality of capital in promoting TFP growth.

In assessing the quality of capital, it is useful to make a distinction between buildings, on the one hand, and machinery and equipment, on the other. Buildings generally have longer lives than machinery and equipment. Since the 1940s there has been a gradual shift towards assets with shorter lives – a shift that has become more noticeable since 1973. Whereas machinery and equipment constituted 31.0 per cent of the capital stock (excluding housing) during the period 1967-73, the proportion rose to 33.5 per cent in 1974-81. Insofar as technological progress is embodied in new capital, this shift towards shorter-lived assets should have provided the opportunity to introduce new techniques at a more rapid pace, thereby increasing the rate of technical advance and the level of best practice. However, ignoring this change in age would bias measured TFP up, not down.

Unfortunately, the impact of these and other dimensions related to the quality of capital is difficult to measure. The estimates produced in one of the few attempts to assess the effect of changes in the quality of capital on productivity growth display a mixed pattern[46] (Chart 4-8 and Appendix Table C-12).

Apart from the quality of capital, there is the issue of capital obsolescence. Some economists have argued that the energy price shocks in 1973-74 and 1979-80 rendered part of the capital stock obsolete and that this premature obsolescence may provide a partial explanation for the productivity slowdown.[47] The decline in the market value of corporations relative to the replacement cost of their tangible assets during the 1970s supports the view that the existing estimates of capital stock may overstate its actual value. On the other hand, the Department of Industry, Trade and Commerce included some questions on obsolescence induced by energy price increases in its October 1981 investment survey, but the responses suggested that there was no effect.[48] This finding is confirmed by certain indirect evidence. First, many studies, including recent research by the Council, have found energy and capital to be substitutes rather than complements as required by the obsolescence hypothesis.[49] Second, if the obsolescence hypothesis is correct, then the slowdown should be most evident in industries such as electrical utilities and telecommunications, which are relatively more energy- and capital-intensive than others. But as the Council's research shows, those industries actually experienced the opposite during the period 1974-80.

The Allocation of Resources

In a constantly changing world of which the Canadian economy is an integral part, resources are being reallocated continuously between different industries and firms, in line with their most productive use. Unfortunately, distortions exist that tend to result in misallocation, usually in favour of less productive firms and industries. Two of many possible sources of distortion in the allocation of resources are inflation and increased government intervention.

Inflation — Inflation can interfere with the price system's resource allocation function. In an inflationary period it is easy to confuse a general price increase with an increase in relative prices or, conversely, an increase in relative prices with a general price increase. During the period after 1973, these problems were particularly severe in Canada, relative to other countries such as the United States, West Germany, and Japan. Thus distortions caused by inflation may have been larger in this country than elsewhere.

The interaction of inflation and a system based on the taxation of nominal income can also have adverse effects. On the one hand, inflation raises the burden of taxation on capital because it erodes the real value of capital consumption allowances and the deduction for the costs of the goods sold. On the other hand, inflation raises interest deductions because of its effect on nominal interest rates (the "inflation premium"). Some have contended that this has resulted in an increase in effective tax rates and explains a substantial part of the productivity slowdown.[50] It stems from the negative effects on investment of the higher effective tax rate resulting from inflation. Others argue that inflation has not resulted in higher aggregate effective tax rates.[51] While the net effect of these offsetting influences has yet to be determined, it is certain that inflation has distorted tax rates across firms and industries, penalizing those with large stocks of long-lived depreciable assets and rewarding those with proportionally more debt. Such distortions probably lead to a misallocation of resources.

One area where important inflation-induced distortions could arise is that of regulated utilities. In a period of inflation, regulated prices based on average historical costs will understate incremental costs and provide an incentive to use too much of the output of the regulated utility. The tendency of industries with high debt/equity ratios to have lower effective tax rates (tax distortions) can compound the problem.

Government Intervention — Has increased government intervention in the economy contributed to the productivity slowdown?[52] From 1967 to 1982, total government spending rose from 37 to 56 per cent of GNP in current dollars, and federal government spending increased from 16 to 24 per cent of GNP. These increases were concentrated in transfer payments. During the same period, total government expenditures on goods and services drifted upward from 17 to 22 per cent of GNP in current dollars but fell from 19 to 18 per cent of GNP in constant (1971) dollars. These divergent trends stem from an increase in the relative price of goods and services purchased by government.[53] Interestingly, total government employment increased at the same pace as the labour force during the period 1970-82. Although the evidence is incomplete, tax expenditures also became more significant during that period.

Regulation is an important form of government intervention in the market that does not show up fully in government expenditures. There were 292 new regulations between 1970 and 1978, compared with 413 during the period 1950-69.[54] One study estimates that 29 per cent of GDP was subject to direct price or output control in 1978.[55] Other instruments of intervention are government loans and investments, and loan guarantees and credit insurance. In the Council's report on government financial intermediation, it was estimated that total government assistance to the private sector through those financial instruments grew much more rapidly than GNP, increasing from 15.5 per cent of GNP in 1970 to 18.5 per cent in 1980.[56]

While it is easy to document the expansion of the government sector, it is difficult to establish a link between increased government intervention and the productivity slowdown. First, the growth of discretionary government spending slowed down after 1974 as governments adopted restraint policies, and this occurred at about the same time as the productivity slowdown intensified. So if government intervention contributed to the slowdown, it was the cumulative size of that intervention – not its increase – that was important. Second, there have been no rigorous empirical studies that have established and quantified the precise links between increased government intervention and the slowdown.

On the other hand, there is evidence that government intervention in the form of industrial policies has not done much to promote economic efficiency, since distortions have resulted from these policies (Appendix Table C-13). A policy can cause distortions if it induces a misallocation of resources. If a distortion does occur, it is always possible to reallocate resources and improve performance. Critical analyses of industrial policy initiatives, undertaken at the Council and elsewhere, have often turned up discouraging results. On close examination many of the initiatives considered were weighted towards both distributional and efficiency objectives, making their welfare consequences difficult to measure.

A good example of such critical analysis is provided by research recently undertaken for the Council on the effectiveness of five federal programs.[57] These are firm-specific programs in the sense that they provide assistance to specific and identifiable firms without necessarily treating all similarly situated firms in precisely the same way. The alleged benefits of these programs are that they increase total investment, creating extra sales and jobs, and that they improve the allocation of capital by encouraging the development of new goods and processes and by stimulating investment in regions with high unemployment. The study suggests, however, that the first of these benefits is largely illusory and that the second, though potentially real enough, is difficult to attain in practice, and possibly illusory as well. The study does show that when all the costs, many of which are concealed, are tallied, the transaction cost of the assistance program can be as large as the investment grant itself.

Many of these policies were established as a result of pressure from special-interest groups. Understandably, those in difficulty are usually those making the most pointed representation in support of assistance measures. Governments must listen carefully, but they must resist special pleading where the costs clearly outweigh the benefits, hopefully limiting their assistance to potential "winners" – industries or firms with the potential to raise national welfare and to account for a large proportion of total future employment. Since the industrial structure is not likely to change fundamentally, many of the "winners" will not be companies in new industries but rather firms that, through superior management and technology, have simply evolved to become the most efficient in their industry. And measures to help the "winners" in a particular industry to the detriment of weaker companies are usually considered to be unfair and unacceptable. In cases where there are market imperfections, government intervention will be justified. But the list of such cases is likely to be short, and picking the "winners" in most instances will be difficult.[58]

Research on regulation provides another example of the effects of government intervention on growth in labour productivity or TFP. The most straightforward explanation as to why regulation retards such growth is that the resources devoted to regulatory compliance cannot be utilized in providing privately traded goods and services. Furthermore, regulation may also impede technological progress because of its bias against new products and new processes.[59]

The evidence on the impact of regulation is fragmentary and mainly confined to the United States. At the aggregate level, the consensus is that regulation has contributed very little to the productivity slowdown.[60] At the industry level, however, the impact appears to be much more significant. One Canadian study on the subject deals with the impact of pollution controls on TFP growth.[61] The results show that after allowing for all other relevant factors, TFP growth of unregulated plants rose by 1.6 per cent a year, while that of regulated plants actually declined.

Summary and Conclusion

The evidence reviewed in this chapter does not completely reveal the causes of the productivity slowdown. It is clear, however, that the slowdown is a real phenomenon and cannot be explained away by measurement problems. It is also clear that the slowdown has led to an erosion of real income growth in Canada and that neither phenomenon is confined to Canada: other countries have experienced similar problems, and the slowdown has played a dominant role in the decline in real income growth in those countries as well.

Given the influence of the slowdown on Canadian living standards, the important question is: What caused it? In Chapter 3 we established the significance of demand (in conjunction with economies of scale) and intersectoral shifts as important factors. Furthermore, we argued that a general slowing in the adoption of new technology resulting from changes in the relative prices of raw materials, particularly those of energy, also contributed to the slowdown. We also demonstrated that the lack of growth in capital stock and the age, sex, or educational profiles of the labour force were not important factors in the slowdown. The additional evidence considered in this chapter tends to support – or, at least, does not contradict – these conclusions. Furthermore, it provides no strong support for any alternative explanation of the slowdown, including such oft-cited factors as insufficient spending on R&D, the deterioration in worker morale, poor management practices, unionism, inflation, or the growth of government intervention in the economy. That is not to say, of course, that these factors have no bearing on growth in labour productivity or TFP but merely that they do not provide satisfactory explanations for the slowdown.

What, then, must be done to revitalize the Canadian economy and restore growth in TFP? At a global level, it is important to establish a general setting for fiscal and monetary policy that will lead to sustained noninflationary growth in output and employment and bring the economy back to a high level of capacity utilization and low unemployment rates within a reasonable length of time. A more specific discussion of our recommendations for fiscal and monetary policy will be provided in the final chapter of this report. But from a microeconomic point of view, there should be two broad thrusts. First, we must promote markets that function efficiently; more specifically, we should give priority to strengthening competition, reforming regulation, and promoting an aggressive approach to trade expansion. Second, we must review existing government policies with a view to modifying those which undermine efficiency by causing distortions in the allocation of resources. This includes policies for industrial support, R&D, taxation, human-resource management, and education. We are less certain about the benefits from industrial policies. Policies that do not create distortions – i.e., that are more neutral across industries and firms – are more likely to be productive in the long run. The Council is currently conducting a study of taxation and will in due course formulate proposals for tax reform. Enhancing performance will be a key consideration in developing these proposals.

5 Monetary Policy

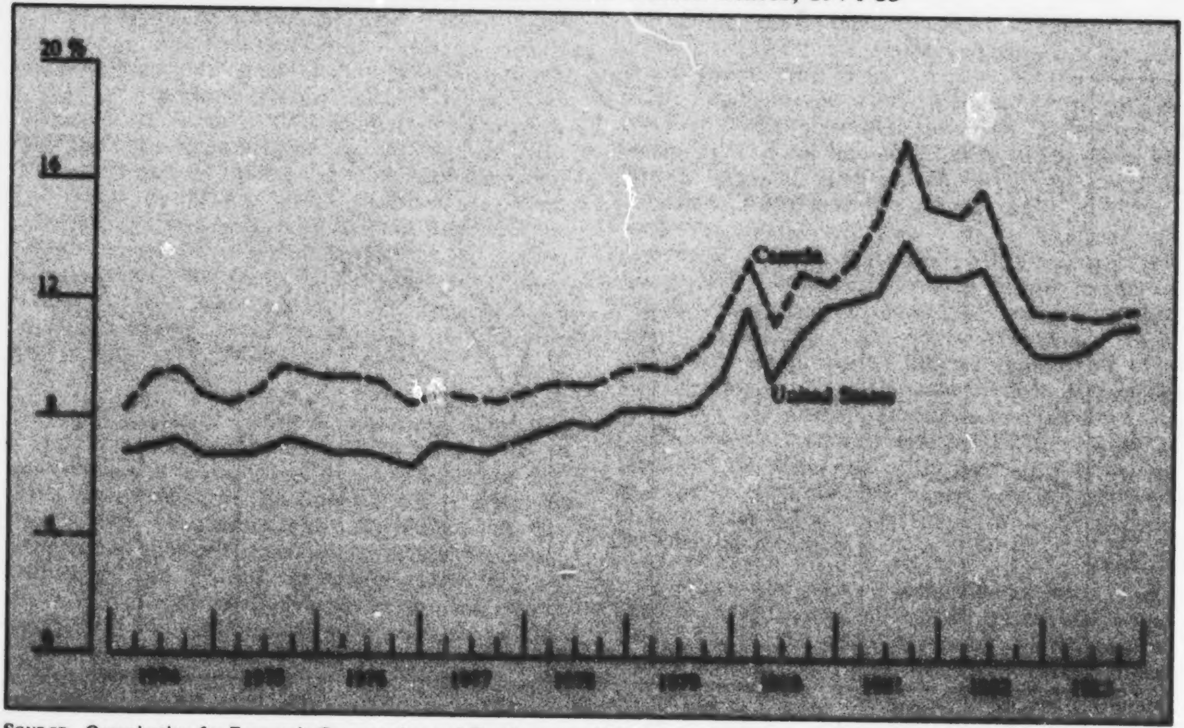
Since the late 1970s, Canadian interest rates have been high, compared with previous levels, and their rise has had a depressing effect on investment and output growth. Who can forget the 22 per cent mortgages and the 25 per cent bank loans to small businesses of only a few summers ago – and the social distress they caused? Today, market interest rates are well below those 1981 peaks, but their decline over the period 1981-85 has been, on average, relatively slower than that of inflation, with the result that businesses, homeowners, and consumers are facing real (inflation-adjusted) interest rates that remain high, by historical standards. While the economic recovery in Canada has so far been spurred mainly by exports and has benefited from strong growth performance in the United States, those high interest rates cloud the outlook for sustained expansion. Indeed, Canada's investment performance during the 1982-84 recovery was weaker than in any of the three preceding recovery periods. While this relatively poor record was mainly attributable to the slow pick-up of final demand, high interest rates played their part in retarding spending.

Decoupling Interest Rates

Nominal interest rates in Canada have historically moved very closely in line with those in the United States. Over the period 1974-83, an increase of 1 percentage point in both long- and short-term U.S.

Chart 5-1

Long-Term Nominal Interest Rates, Canada and United States, 1974-83



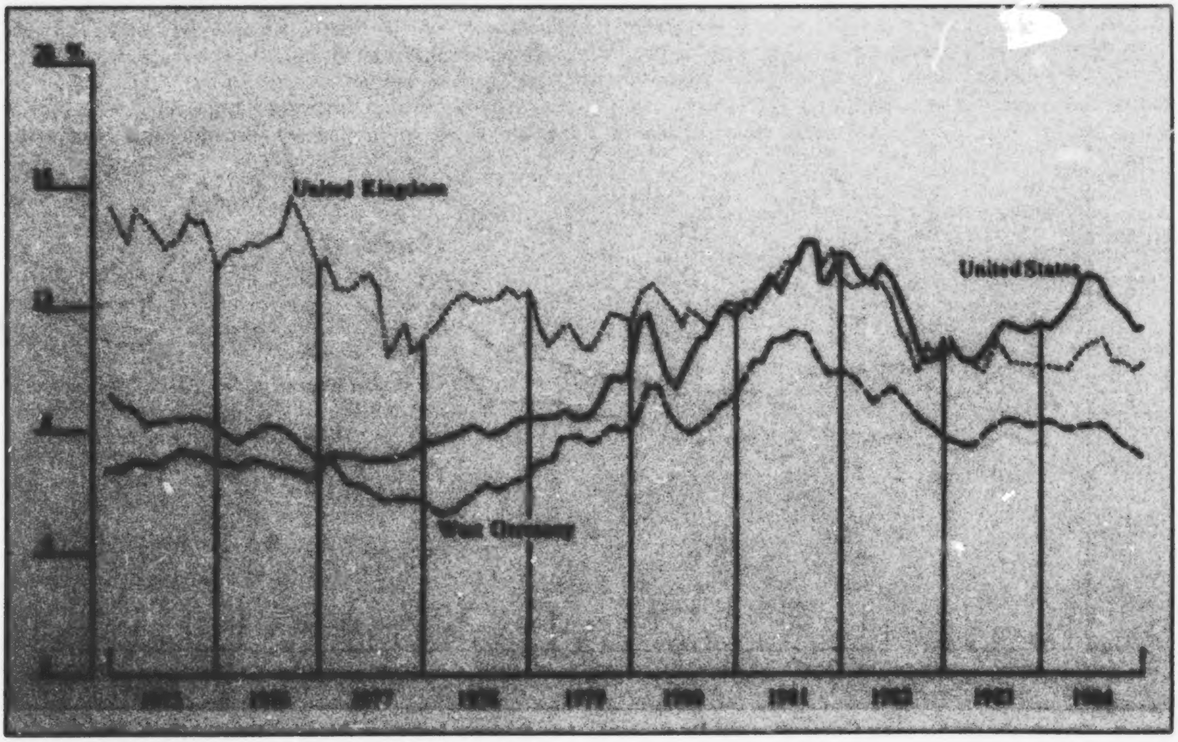
SOURCE Organisation for Economic Co-operation and Development, *Main Economic Indicators: Historical Statistics* (Paris, 1964-83 and April 1985).

interest rates was, on average, followed by a similar rise in Canadian rates (Chart 5-1). Canada's long- and short-term rates averaged over 1 point above U.S. rates, reflecting the fact that, over the period, declines in the U.S. price of the Canadian dollar (the Canada/U.S. exchange rate) were anticipated more often than increases, and possibly incorporating some form of risk premium associated with investment in Canadian assets. The anticipated declines in the exchange rate were realized more often than not, as the Canadian dollar depreciated over the period by some 22 per cent, in nominal terms, vis-à-vis its U.S. counterpart.

The interest rates "imported" from the United States may impose a severe burden on Canada, for several reasons. First, Canadian industry may be more sensitive to the high cost of money than its U.S. counterpart, because the industrial mix in this country is more heavily concentrated in sectors that are capital-intensive. Second, Canadian firms have relied heavily on borrowed funds, especially in the 1970s, and thus they are adversely affected by high and rising interest rates. Third, the Canadian business cycle generally lags behind that in the United States: when it is time to tighten up monetary policy and to increase interest rates south of the border, it may be too early to do so in Canada. Consequently, following the U.S. interest-rate cycle can stimulate or suppress economic activity in Canada at the wrong times. Finally, the monetary policy adopted by the Federal Reserve Board might simply be wrong both for the United States and for the rest of the world. For all of these reasons there have been calls for the establishment of an "independent" monetary policy – a monetary policy "made in Canada."

Chart 5-2

Long-Term Nominal Interest Rates, United States, West Germany, and the United Kingdom, 1975-84



SOURCE OECD, *Main Economic Indicators: Historical Statistics.*

In this chapter we investigate the possibility for Canada to "decouple" its interest rates from those in the United States. The need to study this question closely is reinforced by the fact that, during the late 1970s and early 1980s, nominal interest rates in the United Kingdom, France, West Germany, and Japan did not follow those in the United States nearly so closely as did Canadian rates (Chart 5-2). For example, over that period, an increase of 1 percentage point in the U.S. long-term interest rate was accompanied by a 0.30-point rise in West Germany; for the French and West German short-term rates, the increase was about 0.70 points. Even looser relationships are found for the United Kingdom and Japan.

There are also differences in behaviour between nominal long-term interest rates in France and those in West Germany, even though the two countries are closely associated through the Common Market and the European Monetary System.[1] For nominal short-term rates the link between the two neighbours was somewhat closer than that between either of them and the United States: an increase of 1 point in the West German rate was associated with a rise of 0.91 points in the French rate.

A recent study of the linkages between real interest rates in a number of Western countries found that real short-term interest rates in Canada were not significantly different from those in the United States.[2] An increase of 1 percentage point in the U.S. rate was associated with a rise of 0.91 points in the Canadian rate. The links between U.S. and European real rates were less strong: 0.77 points for the United Kingdom, 0.58 points for France, and 0.44 points for West Germany. Furthermore, in a test of the linkages between European countries themselves, a 1-point increase in the West German rate (which served as a benchmark) was associated with increases of 0.24 points in France and 0.12 points in the United Kingdom.

In analysing the possibility of insulating the Canadian economy from adverse movements in world interest rates, it is important, first, to understand the forces and mechanisms that combine to determine the level of domestic interest rates. The openness of the small Canadian economy and its substantial degree of integration with that of the United States play a crucial role in reducing Canada's room for manoeuvre. Second, it is also useful to review the experience of the United Kingdom, France, West Germany, and Japan in decoupling domestic interest rates from developments on world financial markets. As we shall see, their success in achieving that objective has been considerably less than expected, even when exchange controls have been imposed. There is, for all countries, a tradeoff between a lower interest rate and a lower value of their currency on world markets, at least in the short run. The third step will consist in investigating the options open to Canada. It is particularly important to evaluate the costs and benefits of the high degree of interdependence between Canada and other countries – more specifically, of its economic integration with the United States.

Objectives and Instruments

Often the question is raised whether Canada could run an independent monetary policy. The answer is, of course, that, as a sovereign nation, Canada can indeed choose its own economic policy; the concern about the "independence" of monetary policy really has to do with the controllability of Canadian interest rates – that is, with the ability to isolate their movements from undesirable influences, at a reasonable cost. While Canadian policy makers can either accept world market interest rates or set different rates for Canada, the costs involved in the latter approach could turn out to be very high because of the strong influence of factors external to the Canadian economy, and the authorities might have little room for manoeuvre in their policy choices.

But, more importantly, a low rate of interest is not an ultimate objective of economic policy. The interest rate is viewed either as an intermediate target or as a policy instrument in achieving many of the government's ultimate objectives, such as a high level of employment, a low rate of inflation, strong economic growth, regional economic development, adequate housing for all Canadians, and so on. As an intermediate target, interest rates are seen as a gauge of the direction of monetary policy. When they are high, they are perceived as being associated with a restrictive policy, at least in the short run; lower rates are considered to reflect a more expansionary stance. High real interest rates are often believed to put the brakes on a steaming economy because of their dampening effect on both investment and consumption. As a policy instrument, interest rates are sometimes used by central banks in an attempt to control the growth of monetary aggregates. Higher rates tend to slow down the expansion of the money supply, while lower rates have the opposite effect.

To achieve the ultimate economic and social objectives of government, other instruments and other intermediate targets could conceivably be used. Indeed, interest rates, the money supply, and the exchange rate are not independent variables. The monetary authority can only influence one of them at any one time; the other two follow suit. Monetary policy can be geared towards controlling the growth of the money supply and bank credit or towards setting the level of the exchange rate. Other policy instruments can then be called upon to offset the negative impact, if any, of the link between domestic and foreign interest rates. For example, if a higher level of real interest rates imported from abroad reflects a higher real return on capital in foreign countries, structural changes may contribute to increasing the real rate of return on domestic investment. If this is not readily possible, taxation may play a compensating role. It may also be possible to shield, through subsidization or taxation, certain key sectors of economic activity from the negative impact of these higher rates.

The Determination of Interest Rates

In a Closed Economy

The key factor in all of this, of course, is the degree of Canada's economic and financial integration with the rest of the world. If Canada were a closed economy with no cross-border flows of goods or capital, interest rates would be determined solely by the supply and demand for capital: all savings, both private and public, would have to equal investment plus the government deficit. The Bank of Canada could intervene by buying (or selling) bills, thereby increasing (or decreasing) the money supply, making more (or less) credit available, and, as a result, generating a decrease (or increase) in nominal interest rates. Presumably, governments could also affect interest rates by increasing or decreasing their demand for funds – i.e., by increasing or decreasing their combined deficit. The ultimate impact on nominal interest rates would, of course, rest with the Bank of Canada, which could undo, through open-market operations or other interventions, the impact of the government deficit on interest rates.

In an Open Economy

Canada's Integration with the United States — But Canada is just the opposite of a closed economy. In 1984, for instance, our merchandise exports represented about 27 per cent of GNP. Imports were equivalent to 22 per cent of GNP, as Canadians purchased a large proportion of their consumer and intermediate goods outside the country. The United States was the destination of 76 per cent of Canada's merchandise exports in 1984, while a mere 5 per cent was shipped to Japan, our second largest trading partner. Over 99 per cent of Canada's exports of crude petroleum and natural gas went to the United States, as did 98 per cent of exports of motor vehicles, 97 per cent of auto parts, 85 per cent of newsprint, and 76 per cent of other consumer goods. Moreover, most of our imports came from the United States – 92 per cent for auto parts, 78 per cent for chemicals and plastics, 77 per cent for communications and electronic equipment, and so on. The extent of this trade illustrates the degree of economic integration between Canada and the United States.

This is further confirmed by the number of U.S. firms operating in Canada through subsidiaries, especially in the manufacturing sector. General Electric, General Motors, and IBM are just a few of the U.S. corporate names that have become household words in Canada. U.S interests control some 45 per cent of petroleum and coal products, 57 per cent of chemicals, 63 per cent of rubber products, and 63 per cent of transportation equipment.

Economic integration between the two countries is also reflected in the important movement of people across the border. Canadians have a good knowledge of the institutional framework, tax laws, practices, and ways of thinking of their southern neighbours. This familiarity greatly contributes to the movement of goods, people, and capital between the two countries.

Beyond the real sector, the Canadian financial sector has always been, and still is, wide open to the rest of the world. A good deal of Canada's economic development has been financed from abroad – first from the United Kingdom, then from the United States. Capital flows into and out of Canada have always been very significant. In 1984, for example, Canadian residents sold 45.1 billion dollars' worth of securities to foreign countries and purchased 38.8 billion dollars' worth. Transactions with residents of the United States accounted for some 61 per cent of these sales and 74 per cent of these purchases. Total trade in selected money-market instruments averaged $25 billion in sales and $23.4 billion in purchases. Total foreign direct investment outstanding in Canada has been estimated at close to $62 billion in 1980 (the last year for which data are available), of which 79 per cent was U.S.-owned. Portfolio investment outstanding owned by all nonresidents has been estimated at about $62 billion for the same year.[3] Besides these transactions on the capital account, Canadian residents paid close to $10 billion in interest to foreigners in 1984 and over $3 billion in dividends.

Canada's chartered banks also reinforce, through their operations, the openness of the country's financial system. In 1984, 44 per cent of their assets and 45 per cent of their liabilities were denominated in foreign currencies. Canadians hold deposits in U.S. dollars with Canadian chartered banks, and they contract loans denominated in that currency. The cross-border movement of capital may be initiated by a Canadian resident as well as by a foreigner. Thus the integration of Canadian with world financial markets occurs through the investment decisions of Canadians, as well as through their financing decisions. Similarly, the fact that foreign investors and financiers consider Canada as one of their alternatives is a sign of that integration.

Today, over 50 foreign banks have branches in Canada; among them are such prestigious names as Chase Manhattan Bank, Citibank, and Manufacturers' Hanover (United States); Barclays Bank and Lloyds Bank (United Kingdom); Mitsubishi Bank and the Bank of Tokyo (Japan); Crédit Lyonnais, Banque Nationale de Paris, and Banque Paribas (France); the Dresdner Bank and the Deutsche Bank (West Germany); and so on. Other countries represented include Greece, Hong Kong, India, Israel, Italy, Singapore, South Korea, and Switzerland. Similarly, Canadian banks have branches or offices on the five continents and participate actively in international syndicated loans.

Canada's bond markets are also closely integrated with world financial markets. In 1984 gross new issues of Canadian corporate bonds amounted to $3 billion in the domestic market and $3 billion abroad. Provincial governments issued almost 8 billion dollars' worth of bonds in Canada and 4 billion dollars' worth in foreign markets. Over 55 per cent of the gross borrowings of Canadian municipalities were floated abroad. Many subsidiaries of foreign companies – particularly U.S. corporations – are listed on the Montreal and Toronto stock exchanges.

What makes integration easier is that the international financial market is no longer some exclusive gathering in the City (London) or Wall Street (New York), or in some exotic location like Singapore or Hong Kong. Bankers and business people do their fair share of jetting around the world, but most international financial transactions are now routinely carried out by telephone or desk-top computer, from an office in Montreal's Place Ville-Marie, in Toronto's First Bank Tower, or in the Vancouver headquarters of the Bank of British Columbia. In fact, it is now possible to gain access to the international financial market in almost any branch of a Canadian bank or of a foreign bank operating in Canada. This has been achieved, in part, through competitive moves by our chartered banks, which now offer deposits denominated in U.S. dollars in almost every region of the country.

The Setting of Interest Rates — In an open economy, international transactions in financial assets are at the heart of the mechanism that transmits interest rate changes from one country to another. As a result, the ease with which assets can be traded internationally and the willingness of investors to hold foreign financial assets are major determinants of the speed and extent to which interest rate changes are transmitted across borders. Since Canadian-denominated assets are viewed as being highly substitutable with U.S.-denominated assets and since capital is highly mobile between the two countries, under a system of fixed exchange rates Canada would have to accept U.S. real and nominal interest rates as well as U.S. inflation, except perhaps in the very short run. On the other hand, it has been argued that, under flexible exchange rates, monetary policy could become more effective than under fixed exchange rates and could permit "made in Canada" interest rates, but that has not occurred in practice. Cross-border capital movements largely nullify the benefits gained from the flexibility of exchange rates.

Investors' Behaviour with Asset Substitutability — For an investor[4] acquiring an asset denominated in a foreign currency, there are two types of risks that must be considered in addition to the normal risk attached to any financial asset denominated in the domestic currency. The first is "political risk" – that is, the risk associated with existing or anticipated capital controls or, more generally, with barriers to the free international flow of funds. The second type is "exchange risk" – that is, the risk that the change in the relative value of the domestic and the foreign currencies will be other than expected over the holding period of the asset. If the investor/depositor perceives that any of these risks exists, he will require a premium to acquire and hold the assets denominated in the foreign currency.

Because Canada has pursued a policy of no capital controls and because there is no (or only minimal) default risk associated with Canada as an international borrower, political risk is, for all practical purposes, nonexistent. If there is no political risk, it can be said that there is perfect capital mobility into and out of Canada.

For the deal to be attractive to an investor, the differential between Canadian and U.S. interest rates would have to be at least equal to the expected depreciation of the Canadian dollar, as given by the difference between the spot price and the forward price, plus the cost of effecting a transaction in the foreign exchange market.[5] Investors may also require an exchange risk premium to compensate for their fear of unexpected variations in the exchange rate and for their uneasiness about investing in assets denominated in a foreign currency,[6] either because of market imperfections or because of forecasting errors. This premium will be a function, among other things, of the degree of the investor's risk aversion, of the relative supply of assets denominated in the two currencies, as well as of the degree of variability of the spot exchange rate.[7] A recent study by the Bank of Canada has shown that the exchange risk premium is very small.[8]

This means that investors regard securities denominated in Canadian and U.S. dollars as being very close, if not perfect, substitutes. But does substitutability really exist outside econometric models? American investors surely do not regard debt floated by Canadian companies in the same way as they look upon the bonds of U.S. corporations; they do not view Bank of Montreal or Mitel securities as being equivalent to Citibank or Apple securities. That is not at issue here, however. The notion of substitutability only applies to securities that are identical in every respect (as to risk of default, maturity, and so on) except for the currency in which they are denominated. There is perfect substitutability when investors are indifferent about holding 20-year Hydro Québec bonds denominated in Canadian dollars or in U.S. dollars.[9] In such a case, changes in the quantities outstanding of each security do not affect their relative yield. Moreover, the yields on those two issues should differ only by the expected rate of change in the exchange rate. For substitutability to exist between assets denominated in different currencies, there must be cross-border capital mobility; capital mobility may, however, exist without asset substitutability. As we shall show below, economic integration, international capital mobility, and asset substitutability, in that order, lead to decreasing control over domestic interest rates.

Fixed Exchange Rates — The exchange rate system may also affect the degree of government control over domestic interest rates. Under a system of fixed exchange rates and with perfect asset substitutability, there is a strong tendency towards equalization of nominal interest rates.[10] Only if market participants believe that the level of the exchange rate is unrealistic and cannot be maintained over the long run, could interest rates differ by the expected revaluation or devaluation of the domestic currency. In the absence of perfect asset substitutability, but with perfect capital mobility, an expansionary monetary policy – or, more likely, an intervention in foreign exchange markets – by the Bank of Canada could affect the risk premium attached to Canadian-denominated assets through changes in the relative holdings of Canadian- and U.S.-denominated assets. Even assuming that there is no change in the expected revaluation or devaluation of the Canadian currency, there would then be some room, albeit limited, to modify the interest rate differential. The change in the differential would be of the same magnitude as the change in the risk premium attached to Canadian assets. Furthermore, under fixed exchange rates there would also be pressure for Canada to have the same rate of inflation as the United States.[11] If nominal interest rates and rates of inflation were equalized, so would real interest rates be.[12]

Flexible Exchange Rates — Dissatisfaction with the working of fixed exchange rates led Canada in 1970, and many other countries by 1972, to embark on a system of flexible currency exchange. The expectation at the time, supported by much economic analysis, was that under flexible exchange rates, where the price of the Canadian dollar was determined by market forces, monetary policy would become effective and powerful – even more so with capital mobility and asset substitutability. It was believed that the effectiveness of monetary policy under those conditions would be enhanced by the exchange rate adjustments. For example, an expansionary monetary policy would, in the short run, result in a decline in interest rates; financial capital would flow out of the country, putting more pressure on the exchange rate; the lower Canadian dollar would encourage an increase in exports and a decrease in imports, with further stimulating impact on the Canadian economy.

The reality has been other than expected, however. Despite a 22 per cent decline of the Canadian currency vis-à-vis the U.S. dollar from 1977 to 1984, the movement of Canadian interest rates has diverged from that of the U.S. rates only for short periods of time, and the real exchange rate – that is, the exchange rate adjusted for the difference in inflation between the two countries – has remained remarkably trendless since 1979.[13] The proponents of a flexible exchange-rate system had ignored the impact of monetary policy on the price level and on expectations about future exchange-rate or price changes, and they had not taken into consideration the large degree of economic and financial integration between Canada and the United States.

Given almost perfect asset substitutability, Canadian interest rates – both nominal and real – can remain permanently lower vis-à-vis their U.S. counterparts only if investors expect an appreciation in the nominal or real exchange rate. Any attempt by the central bank to lower interest rates through an expansionary monetary policy (e.g., through the purchase of securities in the open market) will lead to the substitution of U.S.-denominated assets for Canadian-denominated assets in investors' portfolios, without much impact on interest rates. This substitution will give rise to a capital outflow and to a depreciation of the Canadian dollar. The depreciation will continue as long as the central bank maintains its policy or until expectations change and lower interest rates can be established. But an expansionary monetary policy certainly does not provide for a sudden change in expectations towards an appreciation of the Canadian dollar.

In the absence of substitutability but with capital mobility, an expansionary policy will lead to a decline in domestic rates and an outflow of capital. The outflow will continue until expectations change or Canadian interest rates rise again. Thus there is a tradeoff between interest rates and the exchange rate. The Bank of Canada can counteract the upward pressure on domestic rates by further pursuing expansionary policies. But sooner or later this will be translated into higher inflation, which will add further upward pressure on interest rates. The Bank has also resisted any strong downward movement of the exchange rate. Because of the large degree of integration of the two economies, the decline in the value of the Canadian dollar is quickly reflected in an increase in the price of imported goods, which in turn gives rise to inflationary pressures and to upward pressure on nominal interest rates.

That being said, it is true that Canada's inflation performance has improved significantly over the past two years, despite the decline in the exchange rate. Other factors, such as the strength of our economy and money supply growth, also have an impact on the domestic rate of inflation.[14] In other years, exchange rate movements have dominated. In 1982, for example, despite negative real growth and very slow money supply growth the preceding year, inflation remained relatively high, as the dollar declined sharply. In 1984, Canada's inflation performance would have been better had the dollar not fallen so sharply.

In summary, given the substitutability of Canadian- and U.S.-denominated assets and cross-border capital mobility, it is difficult for Canada to maintain lower interest rates unilaterally through monetary policy aimed at either domestic or external targets. The use of monetary policy cannot help Canada improve its lot relative to other countries with respect to inflation-adjusted variables (real interest rates, for example),[15] but it could make matters worse by leading to unnecessarily high levels of inflation and nominal interest rates. Furthermore, wrong policies may have an impact on investors' expectations with respect to the exchange rate, and they may even drive a larger wedge between domestic and international real interest rates. Ultimately, one could even end up with a lower exchange rate and higher interest rates, as has been the case, at times, for Canada and other countries.

At issue here, of course, is the substitutability of Canadian- and U.S.-denominated assets and the economic integration between the two countries. Gearing monetary policy towards the determination of the value of the Canadian dollar relative to a basket of currencies would not solve the problem, as it is the currency of the country with which Canada is financially and economically integrated that counts ultimately.

The Experience Abroad

The experience of other countries with "decoupling" varies because of differences in their institutions, in their approach to the regulation of banking institutions and the control of international capital flows, in the size of their economies, in the extent of their integration in the world economy, and in their willingness to accept the tradeoff between the level of interest rates and the international value of their currency. In comparing the United Kingdom, France, West Germany, and Japan with Canada, it appears that such differences enable these countries at times to pursue an interest rate policy somewhat different from that of the United States.

That relative independence is not without cost, however, and the foreign experience may not be readily applicable to Canada. Decoupling has often resulted in a depreciating currency, and exchange controls have only been able to provide some breathing room and to defer the adjustment process. But most of all, the success in decoupling interest rates depends on the ability to muster investor confidence. In fact, the difficulties encountered in conducting monetary policy in the context of the growing internationalization of domestic financial markets appear to have led to a new hybrid currency system combining elements of an "optimum currency area"[16] and a flexible exchange system.

Economic and Financial Integration

While the countries of Western Europe – in particular the members of the European Economic Community – are to some extent integrated with one another, no major market economy is so closely tied to another as Canada is to the United States. A common measure of international integration is the ratio of exports plus imports to GNP. Using this index, among the countries examined here, West Germany has the highest ratio for trade with all countries (Table 5-1). In terms of integration with another country, France and West Germany, which are often regarded as being highly integrated with each other and as being each other's largest trading partner, register indices of 6.2 and 6.0 per cent, compared with Canada's 31.2 per cent index with respect to the United States. Relative to the United States, the indices of the four countries are all less than one-fifth that of Canada.

Until quite recently, the financial integration of France, West Germany, and Japan with the rest of the world has been hindered by the presence of capital and exchange controls. The move by West German banks to establish foreign branches, for example, is of recent date, half of the present branches having been established since 1975. In 1982 the largest bank, the Deutsche Bank, had only 13 foreign branches; all West German banks together had some 85 foreign branches. French banks have many foreign branches (234 in 1982), but they are severely restricted in their foreign operations on behalf of French residents. Japanese banking institutions are now becoming more interna-

Table 5-1

Ratio to GNP of Trade[1] with the World and with the United States, Five OECD Countries, 1983

	Canada	France	Japan	United Kingdom	West Germany
			(Per cent)		
Total trade	43.0	37.8	23.6	42.0	48.9
Trade with largest trading partner	31.2	6.2	5.9	5.3	6.0
Trade with United States	31.2	2.7	5.9	5.3	3.6

1 Exports plus imports.

SOURCE Based on Organisation for Economic Co-operation and Development, *Monthly Statistics of Foreign Trade* (May 1985); and OECD, *National Accounts, 1960-1983* (Paris, 1984).

tionalized, particularly since the lifting of foreign exchange controls in 1979. The European Monetary System has brought West Germany and France closer, and it may act in the same way for Britain should it decide to join. Many indications point to increased financial integration in Europe:

> There has been a dramatic growth in turnover on the foreign exchange markets, not to mention the more recent expansion of trading in foreign currency and interest rate futures. Banks' balance sheets have become more and more internationally oriented, whether looked at in terms of cross-border claims and liabilities, of assets and liabilities denominated in foreign currencies, of profits originating from international transactions, or of reliance on international interbank funding. The large banks' liquidity management is integrated on a world-wide basis. ... The technology of communications is developing at a rapid pace. Financial innovations are spreading more and more quickly from one country to another. ... Finally, and even more significantly, interest rate variations in the United States have had an appreciable impact on interest rates elsewhere.[17]

Market Forces and Monetary Policy

The choice of instruments of monetary and credit policy is, to a large extent, influenced by the organization and operation of a country's financial markets. In particular, certain instruments will be used where market forces play an important role in determining the course of the money supply or the level of interest rates, and others will be more appropriate when market forces are not allowed to operate freely. Indeed, major differences exist between countries with respect to the role played by freely operating market forces in determining the cost and allocation of credit. In some countries, these are entirely determined by the market; in others, they are determined by the authorities. It is instructive, in this respect, to examine briefly the conduct of monetary and credit policy in Canada and compare it with the situation in the United Kingdom, West Germany, Japan, and France. By linking the process of monetary control to the institutional and regulatory framework, it is possible to assess the impact of this framework on the process of interest determination.

Canada — Freely operating and efficient financial markets are viewed by Canadians as the best way to ensure the least costly financing for industry and other borrowers. As a result, unhindered financial markets and financial institutions play an important role in the transfer of financial resources from lenders to borrowers. Government authorities aim at maintaining competition between institutions and agents, and only occasionally do they try to influence private decisions with respect to the allocation of funds. Monetary policy – or, more precisely, the determination of the growth of monetary aggregates and, indirectly, of credit conditions – is effected through open-market operations, and the shifting of government deposits between the Bank of Canada and the chartered banks. The role of the central bank, which intervenes as one of many agents, albeit with greater ultimate powers than the others, is reflected in the weekly setting of the Bank rate – the discount rate – which is closely related to the interest rate on the weekly auctions of treasury bills. U.S. interest rates have a direct impact on Canadian rates through the positions taken by investors or through the actions of the Bank of Canada aimed at smoothing exchange rate fluctuations. Changes in primary reserve requirements are not used in the conduct of monetary policy. The secondary reserve requirements have been modified only occasionally, and the changes were more often in line with the financing requirements of the federal government than with the need to achieve monetary policy objectives.

United Kingdom — Freely operating financial markets are also the cornerstone of the financial system in the United Kingdom. Directly imposed controls on the operations of the banking and financial system are few. Controls on foreign exchange dealings were introduced in 1939 as a war measure, however. Their aim was to permit greater control over domestic circumstances and to conserve foreign exchange reserves in the context of an unfavourable current-account situation. They affected portfolio investment abroad, direct investment, and the financing of trade with other countries.[18] All controls were abandoned in mid-1979 not only because of the government's general philosophical approach but also because they had outlived their usefulness. In addition, the controls were costly. Many people were involved in their implementation, not only at the Bank of England but also in commercial banks. Investment opportunities for British residents were reduced; they could not hold bank accounts abroad; they could not borrow and lend in foreign currency; and the efficiency of the savings allocation process was reduced.

Moreover, it is not clear that foreign exchange controls contributed to the achievement of government objectives. Sterling crises did occur even when controls were in place, mostly because of leads and lags in trade flows and because of capital movements initiated by foreigners that were not subject to the controls. On several occasions, the Bank of England had to seek assistance from the International Monetary Fund. (For example, in December 1976 it arranged for an IMF standby credit of $3.9 billion (U.S.); this credit was partly drawn in 1977.) It is quite possible, although difficult to ascertain, that in the absence of controls the Bank of England might have had to seek outside help more often and for larger amounts. Similarly, it is difficult to evaluate the contribution of controls to the weakening of the linkages between domestic and foreign interest rates. Again, in the absence of controls interest rates might have had to have been higher than they were. It is significant, however, that whenever the level of foreign exchange reserves in the United Kingdom was threatened, the Bank of England pushed domestic interest rates higher, even in the presence of controls. This happened between July 1973 and January 1974, for example.

The British financial markets are well developed and serve as an important vehicle for the transfer of funds from savers to borrowers. As is the case with Canada's central bank, the Bank of England has relied heavily on open-market operations. In the conduct of monetary policy the Bank monitors several aggregates – such as the quantity of bank credit and of a broadly defined monetary aggregate – public sector financing requirements, and, of course, the exchange rate. When the exchange rate shows some weakness, the Bank is likely to raise interest rates if it views the weakness as a signal about the direction of domestic monetary policy. It will be less worried if the weakening of the pound results from external factors, such as a strong U.S. currency. Because of the inflationary impact of depreciation, however, there is a limit to the depreciation of the pound that is considered acceptable, even when it is triggered by foreign considerations.

Interest rates in the United States do have an impact on the British economy, particularly through capital flows, but the influence falls partly on interest rates and partly on the exchange rate. There have been instances where U.K. interest rate movements have not followed those in the United States. Recent history illustrates the tradeoff between interest-rate and exchange-rate adjustments, and shows the sensitivity of the British currency to the spread between U.K. and U.S. rates. As U.K. interest rates followed a rather independent course, at times falling below those in the United States, the pound embarked on a downward trend from 1981 on (Chart 5-3). At times, the Bank of England had to push short-term interest rates up sharply in order to resist a too-steep decline in the British currency. This happened, for instance, in 1981, in July 1984, and again at the beginning of 1985. And Britain ended up with higher interest rates and a lower value of the pound. The general decline in U.K. short-term rates between 1980 and 1984, and in long-term rates between 1981 and 1984, was accompanied by a decline in the real pound/U.S. dollar exchange rate and in the real effective exchange rate – i.e., in the value of the pound measured against a basket of currencies of several countries and adjusted for the differential in inflation vis-à-vis those countries (Chart 5-4).

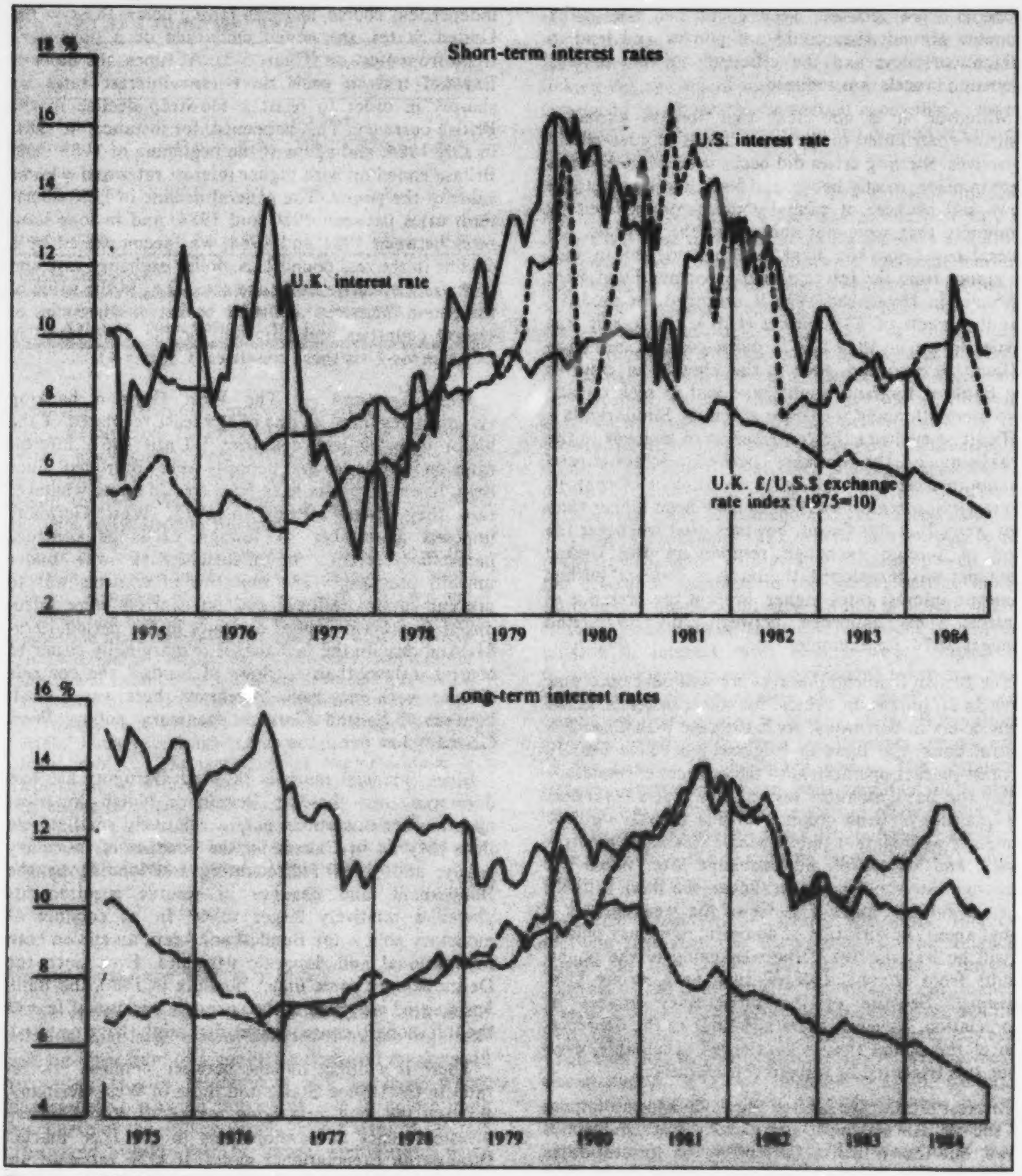
West Germany — The West German banking system is regarded as one of the least regulated of the major industrialized countries.[19] Until 1967, interest rates on both loans and deposits were controlled; since then, however, banks have been free to quote whatever rate they choose. Prior to 1975, West Germany imposed a number of foreign exchange controls, particularly when the Deutschemark was under upward pressure.[20] The objective of controls was to prevent capital inflows, and no controls were introduced to prevent capital outflows in the period 1979-81. And despite the fact that it is marginally easier to control inflows than outflows of funds,[21] the controls did not work very well. Whenever there was a clash between U.S. and German monetary policy, West Germany lost out in the end.

Since financial markets in West Germany are less developed than those in Britain or North America, open-market operations play a relatively smaller role than they do in Canada in the conduct of monetary policy; until 1981 rediscounting and lending by the Bundesbank and changes in reserve requirements played a relatively larger role.[22] In its conduct of monetary policy, the Bundesbank keeps an eye on both international and domestic variables. Ever since the Deutschemark came under pressure in 1980, the Bank has resisted a decline in the currency because of fear of the inflationary consequences that might have resulted.

There is a direct linkage between nominal interest rates in the United States and those in West Germany, through the long-term bond market.[23] West German investors react to developments in the U.S. market through an expectational game. If U.S. rates go up, investors will also expect a rise in the German bond market and will switch to short-term securities. These expectations are based on the probable response of the

Chart 5-3

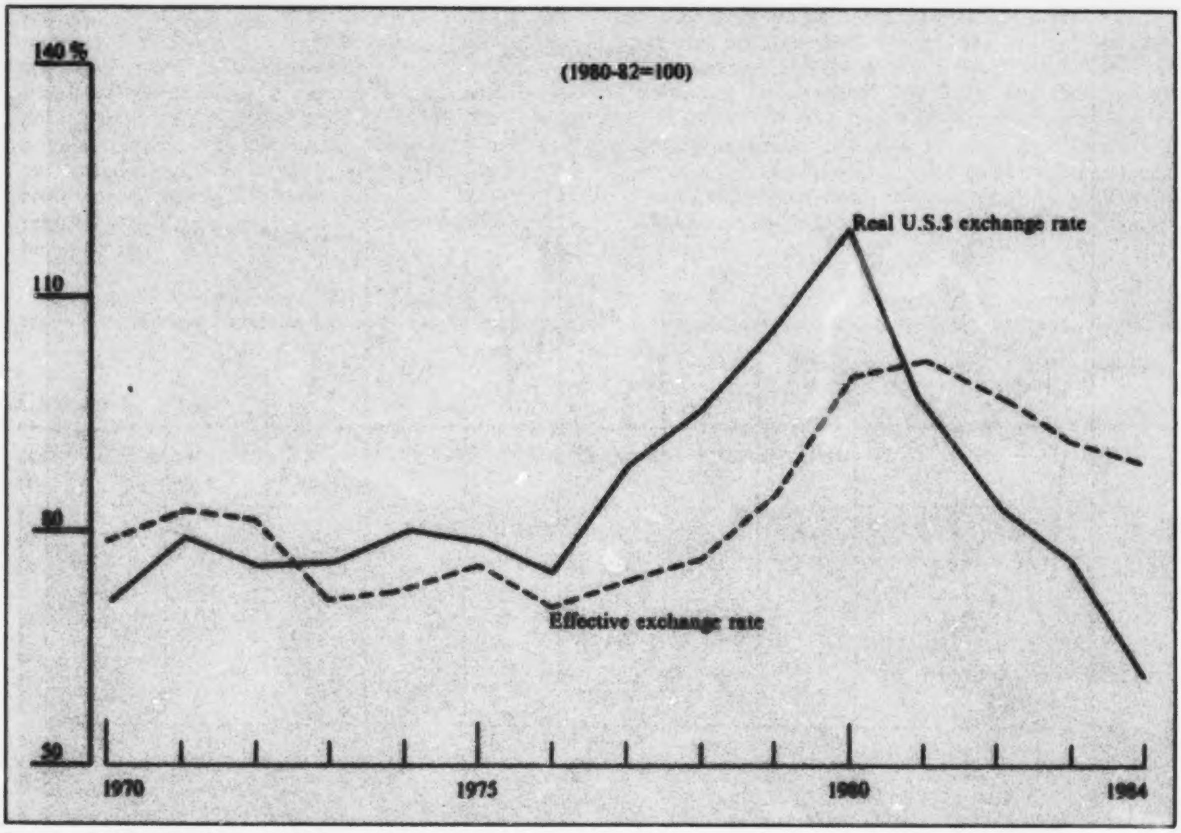
Short- and Long-Term Interest Rates, and Exchange Rate of the Pound, United Kingdom, 1975-84



SOURCE OECD, *Main Economic Indicators: Historical Statistics.*

Chart 5-4

Real U.S. Dollar Exchange Rate and Real Effective Exchange Rate of the British Pound, 1970-84



Source OECD, *Main Economic Indicators: Historical Statistics;* and Morgan Guarantee Trust Company of New York, *World Financial Markets* (August 1983 and March/April 1985).

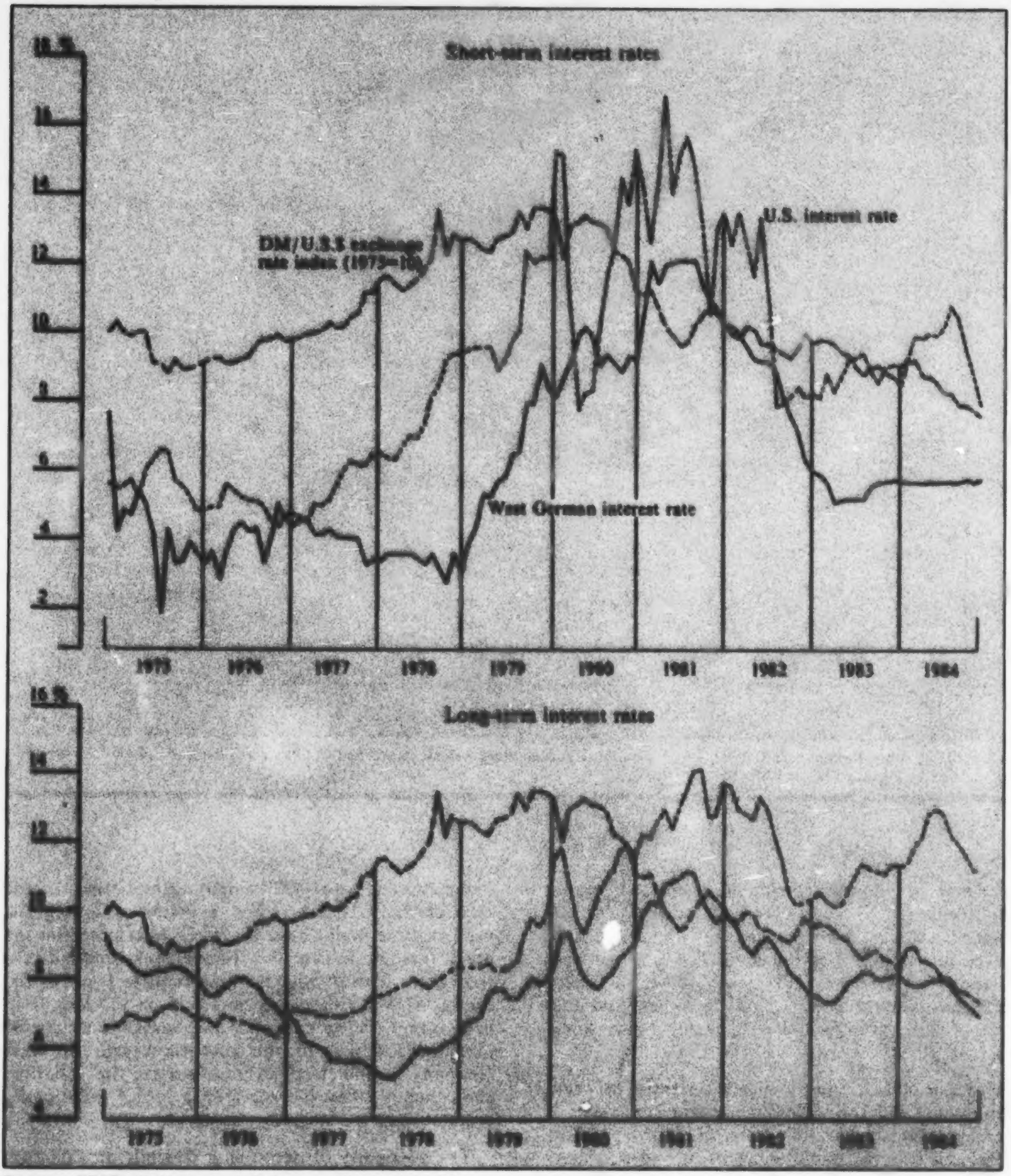
Bundesbank to downward pressure on the mark. Portfolio changes do occur when U.S. rates go up, but cross-border capital flows are not that important, and the expectations effect is the main link between the U.S. and West German rates. Were it not for these expectations, capital flows would be larger, and the impact of U.S. rates would still be felt, with some delay.

There is at present a fairly large differential between West German and U.S. rates, the former being 4 or 5 percentage points below the latter (Chart 5-5). The Bundesbank believes that further efforts to decouple could have a negative impact on expectations with respect to inflation and the exchange rate. The Bank is faced with nervous financial markets that would exaggerate a policy of benign neglect towards the Deutschemark. Furthermore, a policy of letting the mark decline might have no effect whatsoever on the bond market. When the Bundesbank lowered the short-term interest rate by 1 percentage point in the spring of 1983, there was no effect on the long-term bond rate. One explanation is that investors concluded that the lowering of the short-term rate in West Germany would lead to an increase in inflation; consequently, they incorporated a larger inflationary premium into the long-term bond rate.

The possibility of decoupling depends on exchange rate expectations and on confidence in the West German economy. These are determined in the long run by the relative performances of the West German

Chart 5-5

Short- and Long-Term Interest Rates, and Exchange Rate of the Deutschemark, West Germany, 1975-84



SOURCE OECD, *Main Economic Indicators: Historical Statistics.*

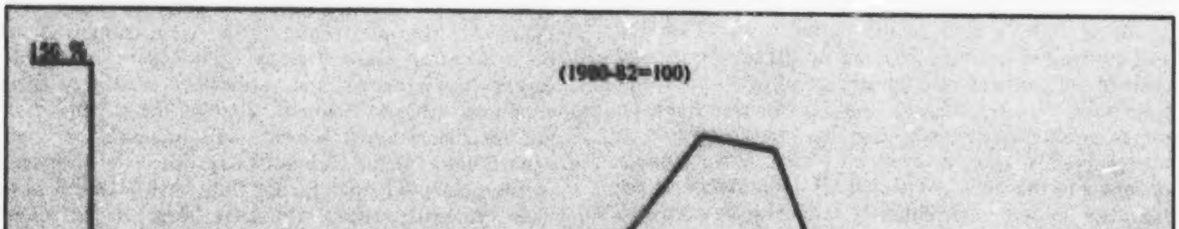
and U.S. economies. In that respect, it is not surprising that West Germany was able to keep interest rates lower by almost 4 to 5 percentage points. The West German inflation experience is among the most favourable in the world, and the authorities are very serious about reducing budgetary deficits. Furthermore, from a high current-account deficit, West Germany went to a comfortable surplus position. Financial institutions and businesses have experienced an unusually long period of sizeable profits. Because of a good economic performance, the authorities, and particularly the Bundesbank, may now have more room for manoeuvre. Should the present policies be relaxed, however, confidence in the Bundesbank could be lessened.

As was the case with the United Kingdom, there is a tradeoff between interest rate spreads and the exchange rate. As the spread in favour of the United States increased, the West German exchange rate declined; indeed, the Deutschemark has been depreciating since 1982. While the real Deutschemark/U.S. dollar exchange rate has been on a downward trend since 1981, the real effective exchange rate was relatively stable from 1981 to 1984, reflecting an appreciation of the mark with respect to other European currencies (Chart 5-6). The fact that the depreciation of the nominal exchange rate had not been pronounced and that an interest differential of about 4 percentage points could be sustained, reflected the market's confidence towards West Germany. This allowed real interest rates to be lower in that country than in the United States.

Japan — The authorities still impose direct controls on the Japanese financial system. Since the late 1970s,

Chart 5-6

Real U.S. Dollar Exchange Rate and Real Effective Exchange Rate of the Deutschemark, 1970-84



SOURCE OECD, *Main Economic Indicators: Historical Statistics;* and Morgan Guarantee Trust, *World Financial Markets.*

however, the amount of control, particularly with regard to foreign exchange transactions, has been reduced. Prior to 1979, practically all interest rates, including both the lending and borrowing rates applied by commercial banks, were regulated, with only the bill discount rate and the call money rate being exempt from these controls.[24] To prevent capital inflows or outflows from upsetting domestic interest-rate policy, the holding of foreign securities by residents and commercial bank deposits by nonresidents were closely regulated. The objective of these arrangements was to provide credit to Japanese industry at very low rates of interest. The controls were successful in that respect, but at the cost of isolating the country from the rest of the world.

In 1979, Japan began to deregulate interest rates and foreign exchange dealings. At present, many rates remain regulated, but they are allowed to move somewhat more closely in line with market-determined rates.[25] Moreover, most controls on international capital movements have been removed, except that prior notice must generally be given. The "liberalization" of the yen, as it is often called, began in the mid-1970s as Japan's high-growth period came to an end and companies had to rely more on exports to expand their production and as domestic investment opportunities were greatly reduced. As far as the financial system itself is concerned, Japan has moved towards an unregulated, market-determined system and a greater openness to the world. With partial deregulation of the financial system, conventional monetary instruments are becoming more important. Open-market operations are still not as common as in North America or the United Kingdom, largely because of the lack of a well-developed secondary market in treasury bills. Prior to the move towards deregulation, lending limits, the discount rate, and moral suasion – or "window guidance," as it is called – were the main instruments of monetary and credit policy. While window guidance is still used and lending limits could still be legally imposed, their importance has declined, as the Bank of Japan is relying more on market-oriented policies.[26]

Japanese interest rates have shown less tendency to follow U.S. rates than have those of other countries, even during periods of less restrictive foreign exchange controls (Chart 5-7). This may, in fact, be attributable to the continued existence of some controls on interest rates. Recently, however, large capital outflows in response to high U.S. interest rates have exerted upward pressure on long-term interest rates in Japan. The Bank of Japan has also intervened at the short end of the market to counter downward pressures on the yen. It should also be noted that there has been a significant decline in the real yen/U.S. dollar exchange rate since 1978 (Chart 5-8). On a trade-weighted basis, the real effective exchange rate declined from 1978 to 1982 but has since increased, reflecting the strength of the Japanese currency with respect to those of other trading partners.

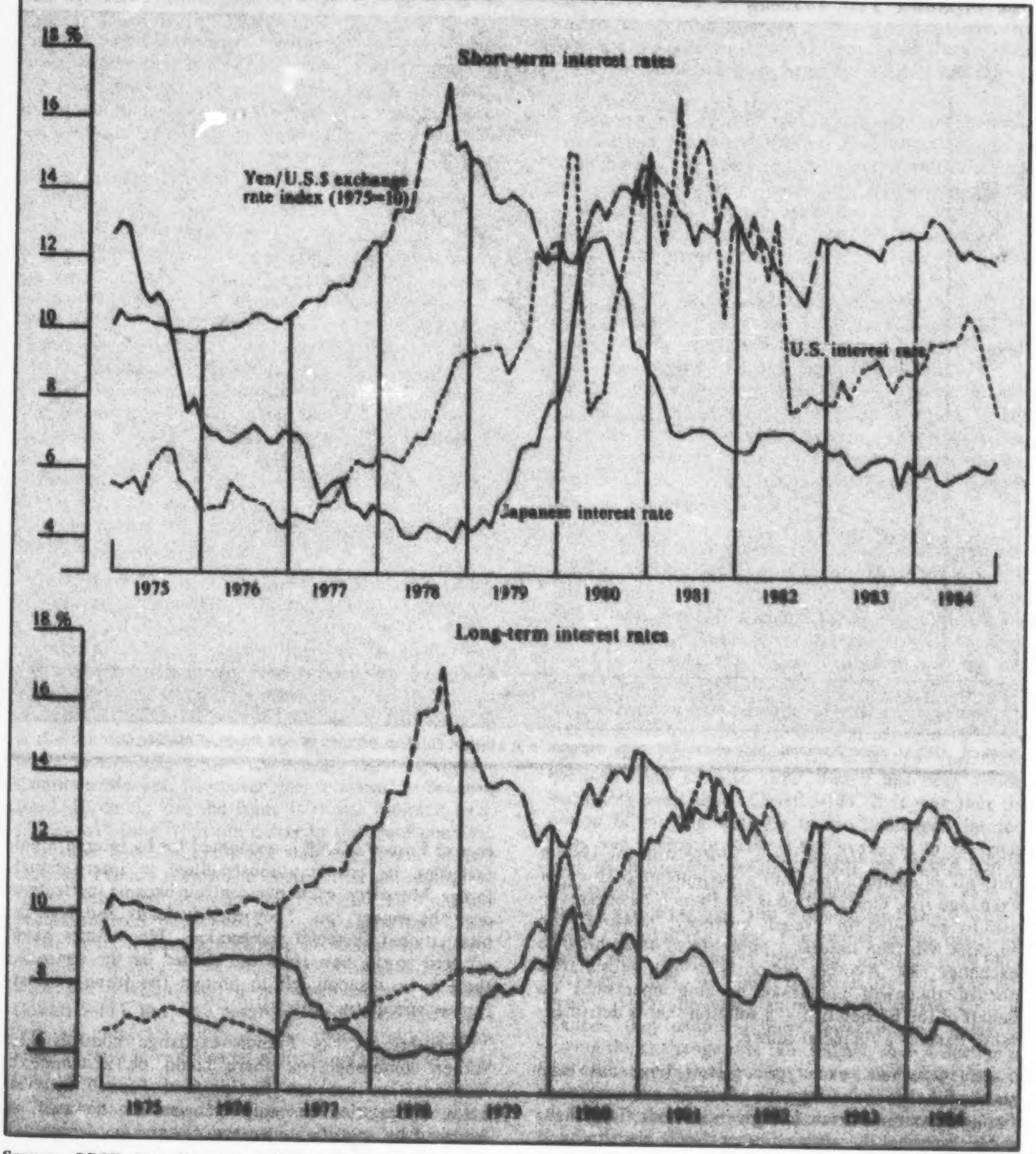
France — France stands almost at the other end of the spectrum with respect to monetary and financial regulation, having an elaborate system of credit controls internally and exchange and capital controls internationally.[27] Both short- and long-term interest rates are under the direct control of the government and the Banque de France.[28] Some sectors and industries benefit from loans at preferential rates – in the housing, energy, and export sectors, among others. In all, 50 per cent of all credit granted in France is on a preferential basis. Because many interest rates are under government control and do not follow market fluctuations, it has also been necessary to regulate the growth of credit by the banking system. Commercial banks, which must maintain reserves against deposits, are penalized for credit growth above the permitted rate by the imposition of additional reserves.[29]

Exchange controls have been a more or less permanent feature in France since before the Second World War, at times constraining and at times more symbolic. Controls were strongly tightened in 1981, and several levels exist. First, importers must pay their suppliers within 48 hours of receiving the merchandise, and exporters must convert the proceeds of their exports into French francs 15 days after the shipment of the goods, whether or not they have received payment. Recently, these rules have been relaxed somewhat by permitting the importing firm to cover itself for six months if it is billed in "European currency units" (ECU). Loans denominated in francs to nonresidents are prohibited. This cuts off the Eurofranc market from the domestic market. Direct investments are also regulated in both directions and are subject to authorization. Financing of investment abroad is regulated: a proportion of such investment must be financed through foreign borrowing. The purchase of foreign securities by French residents is regulated by the system of "la devise titre." French residents can obtain foreign currencies to purchase foreign securities only when foreign securities held by French residents are being sold. One exception is the participation by French banks in syndicated loans.

These controls impose heavy costs on the French economy. Besides the administrative cost of such an elaborate system, there are costs for companies that cannot cover their international commercial operations; residents cannot maximize the return on their portfolio by diversifying into foreign securities. Moreover, controls have a negative demonstration effect, as they are often viewed as an admission of the weakness of the economy. Exchange controls force businesses to

Chart 5-7

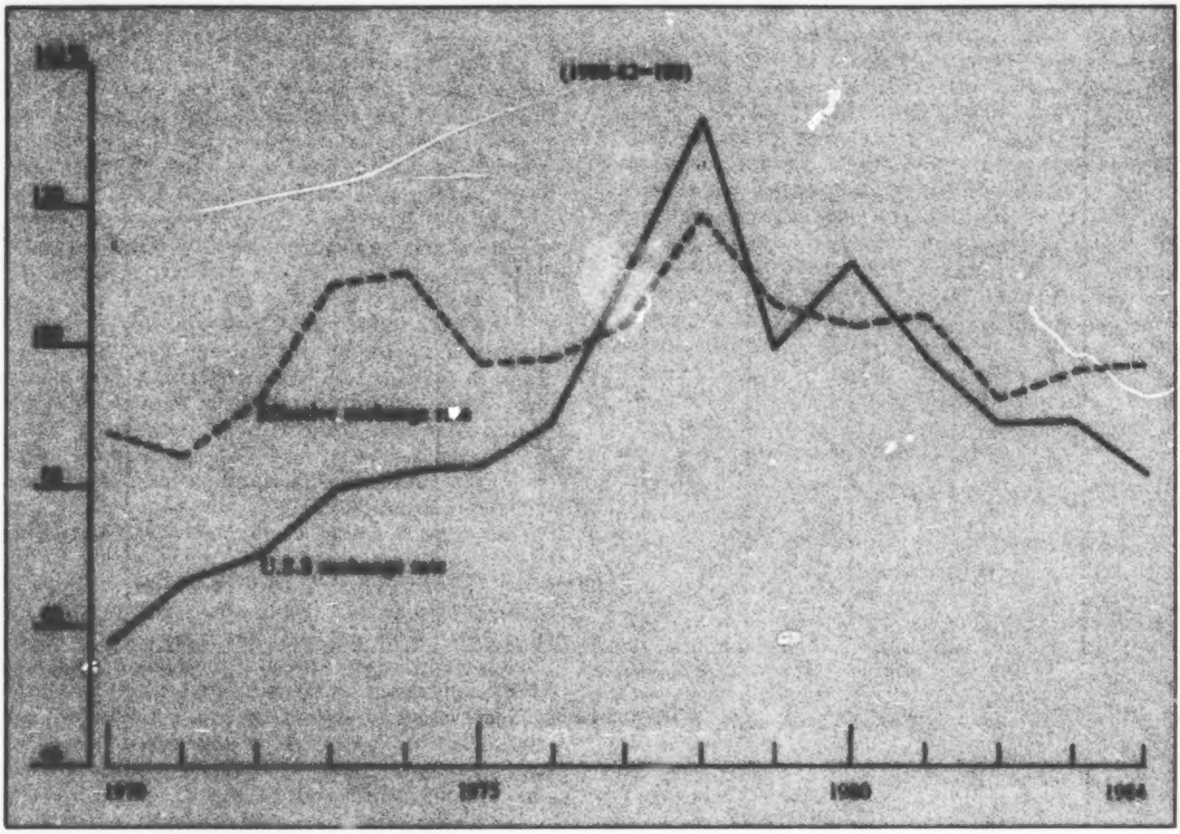
Short- and Long-Term Interest Rates, and Exchange Rate of the Yen, Japan, 1975-84



SOURCE OECD, *Main Economic Indicators: Historical Statistics.*

Chart 5-8

Real U.S. Dollar Exchange Rate and Real Effective Exchange Rate of the Japanese Yen, 1970-84



SOURCE OECD, *Main Economic Indicators: Historical Statistics;* and Morgan Guarantee Trust, *World Financial Markets.*

find a way to go around them. Worse still, the system puts all exporting firms into a permanent position of exchange risk. One solution is for French businesses to ask to be billed in French currency; however, the supplier will then request a premium to cover his own exchange risk. Another option is to own subsidiaries abroad that will undertake hedging operations on behalf of the French firm – a solution that is detrimental to Paris as a financial centre.

On the whole, exchange controls have not been successful in sheltering the French economy and financial markets from foreign influences. They have merely enabled the authorities to choose the timing of the adjustment to changes in international conditions or to changes in domestic conditions that influence the value of the French currency. Since more than 30 per cent of France's GNP is accounted for by international activities, its economy must adjust to international forces. Moreover, exchange controls become ineffective over the longer run. They modify leads and lags in international financial transactions. Once firms have adapted to the new rules established by the controls, there is no weapon left to protect the franc against further speculative attacks.

Theoretically, as French exchange controls are rather comprehensive, there could be a complete disconnection between foreign and French interest rates. Speculation on capital movements, however, is replaced by speculation on the movement of physical goods. If there is some expectation of a decline in the franc because of a rise in foreign interest rates, manufacturers will import goods in anticipation and stockpile them. One way of preventing this stockpiling is to have very strict credit controls, so that importers cannot finance their excess inventories; or stockpiling can be made more expensive by raising domestic interest rates. In the latter case, the higher foreign interest rates have been indirectly translated into higher domestic rates. Thus it is not surprising that there has recently been a movement towards loosening exchange controls in the context of a general movement towards the liberalization of the French financial system. In June 1984, the Governor of the Banque de France called for the gradual lifting of exchange controls.

In fact, despite the existence of exchange controls, France has been forced to consider the implications for the franc in the conduct of its monetary policy. Since 1976 the Banque de France has tried to smooth movements in the exchange rate and to avoid a sharp depreciation of the franc. Depreciation too often results in increased inflation, which in turn results in further depreciation. The perverse effect of depreciation seems to win over the benefits. Following a depreciation of the national currency, the increase in the cost of imports is immediate, while the contribution to increased exports takes longer. The latter depends on the reaction of exporters to the change in the value of the currency. This contributes to further imbalances in the balance of payments.

Movements in French interest rates have at times been quite different from those of their U.S. counterparts (Chart 5-9). This resulted in the decline in the franc/U.S. dollar exchange rate from 1980 until 1985. But monetary policy has basically been conducted with the objective of stabilizing the value of the franc with respect to the Deutschemark, because West Germany is the dominant economy in the area and most French trade takes place with that country and within the Common Market. Moreover, the relationship between the U.S. dollar and the franc is rather indirect; first, money will flow from the dollar to the Deutschemark and then between the mark and the franc. In this context, French policy has been rather successful, as the exchange rate between the franc and the mark has been stabilized, particularly in 1983 and 1984 (Chart 5-10). Indeed, the real effective exchange rate has not declined as much as the real franc/U.S. dollar exchange rate; in fact, it increased slightly in 1984 (Chart 5-11). But, as a result of this foreign-exchange-oriented monetary policy, French short- and long-term interest rates have followed more closely those of West Germany.

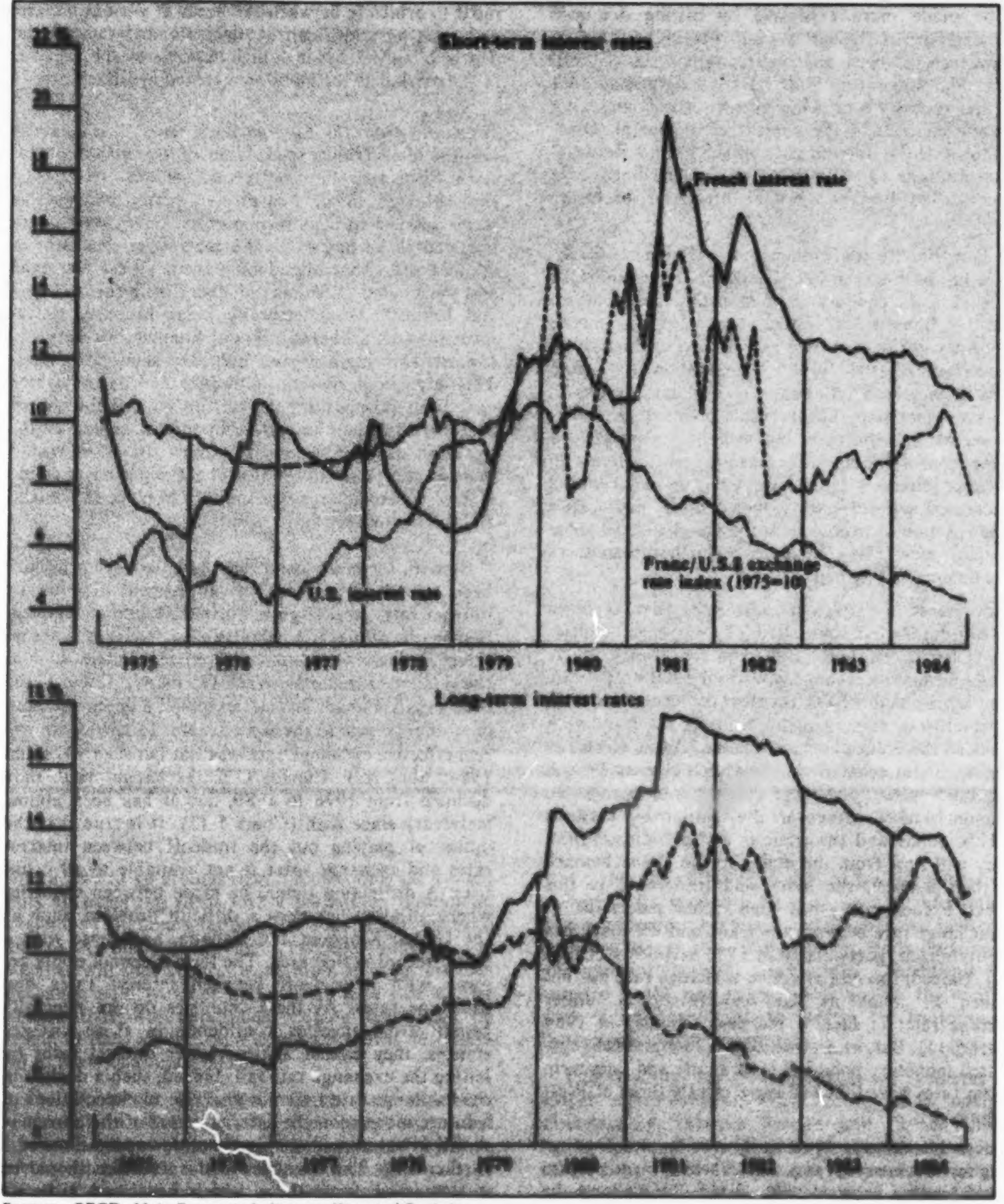
There has always been in France a philosophical liking for low interest rates; that is why a large proportion of lending rates are subsidized. This allows the pursuit of government objectives to be financed at minimum cost to the public purse. But this policy is now coming under criticism, because subsidization does not necessarily result in incremental activity. Moreover, there is no adequate system within government to arbitrate between the needs of various sectors; and it is very difficult to measure and control the degree of subsidization, which depends on the vagaries of the market as the loans are granted at a fixed rate.

Lessons from the Foreign Experience — This foray into the international scene leads to four major conclusions. First, exchange controls do not work in the long run, although, in some cases, they permit adjustments to be delayed to a more opportune time. Most countries that have had exchange controls of one form or another are either abandoning them (West Germany and the United Kingdom) or liberalizing them (Japan and France). More generally, there has been movement towards a liberalization of financial markets and towards allowing a greater interplay of market forces. This is particularly true in France and Japan, which have been at opposite poles to Canada and the United States with respect to certain important aspects of the workings of their financial systems. In other words, there is movement in the rest of the world towards the kind of economic organization now in place in Canada and the United States.

Second, for many countries there does seem to have been a tradeoff between the adjustment of domestic interest rates to foreign interest rates and a depreciation in the value of a country's currency on international markets. Compared with other countries such as the United Kingdom, West Germany, France, and even Japan, Canada has not accepted a depreciation in its exchange rate to the same extent. In particular, the real effective exchange rate was flat between 1978 and 1984; the real Canada/U.S. exchange rate only declined from 1976 to 1980, and it has been almost stationary since then (Chart 5-12). It is true that the option of playing out the tradeoff between interest rates and exchange rates is not available to all countries. A distinction should be made between countries where inflation has been a difficult problem, such as the United Kingdom and Canada, and those with a better record in that area. The former cannot easily get away with a tradeoff between interest rates and exchange rates. As these countries do not generally benefit from investor confidence in these circumstances, they cannot achieve lower interest rates by letting the exchange rate fall. Indeed, such a decline in the exchange rate may not give rise to expectations of a future increase in the external value of the currency. A fall in value may simply generate expectations of a further drop. The countries in this situation should be distinguished from those which have had a better inflation performance, such as West Germany and Japan.[30]

Chart 5-9

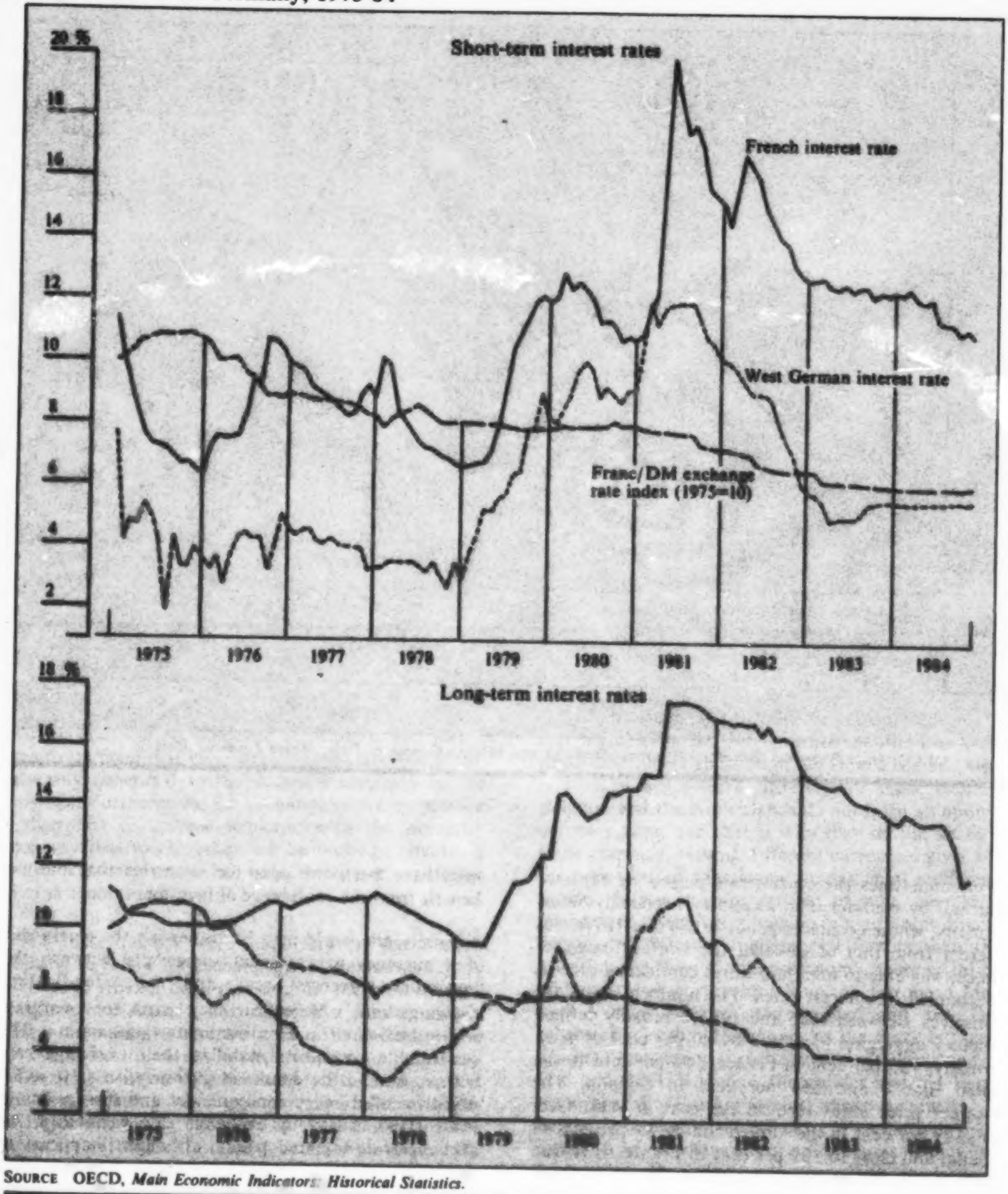
Short- and Long-Term Interest Rates, and Exchange Rate of the Franc, France, 1975-84



SOURCE OECD, *Main Economic Indicators: Historical Statistics.*

Chart 5-10

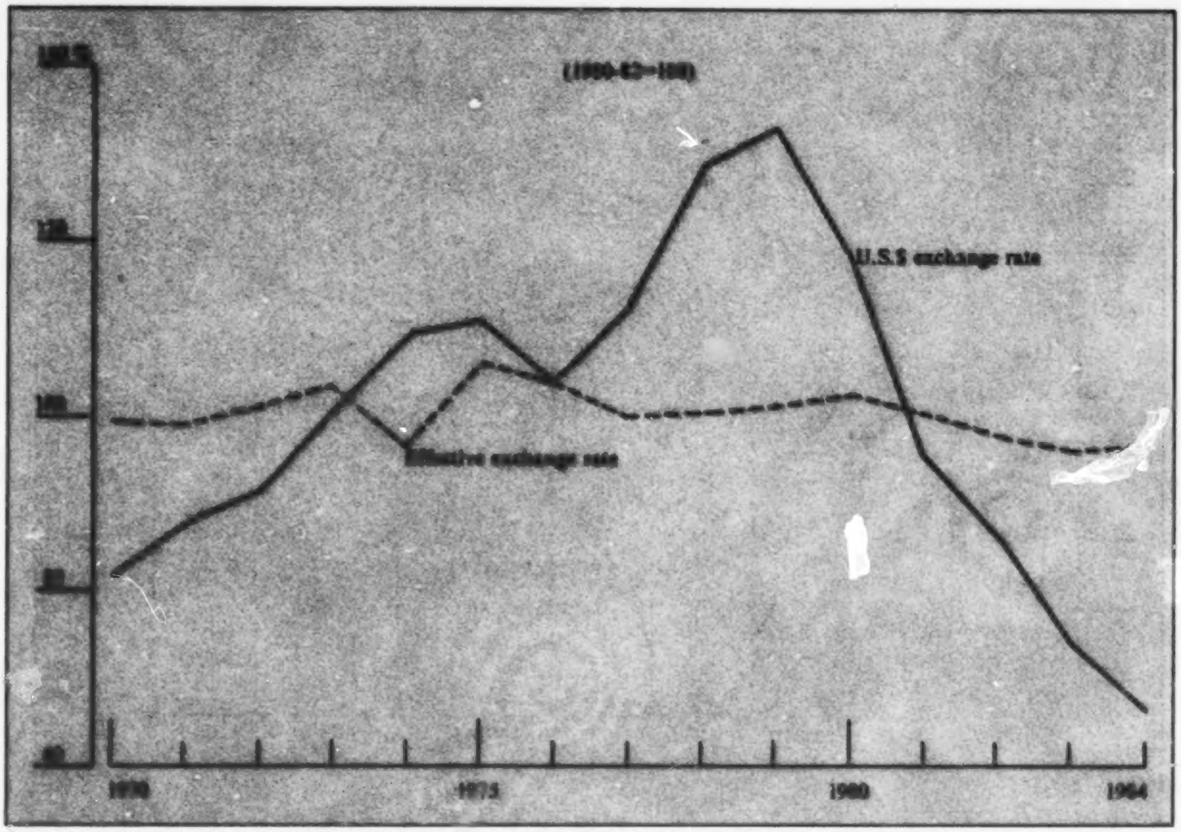
Short- and Long-Term Interest Rates, and Exchange Rate, France and West Germany, 1975-84



SOURCE OECD, *Main Economic Indicators: Historical Statistics.*

Chart 5-11

Real U.S. Dollar Exchange Rate and Real Effective Exchange Rate of the French Franc, 1970-84



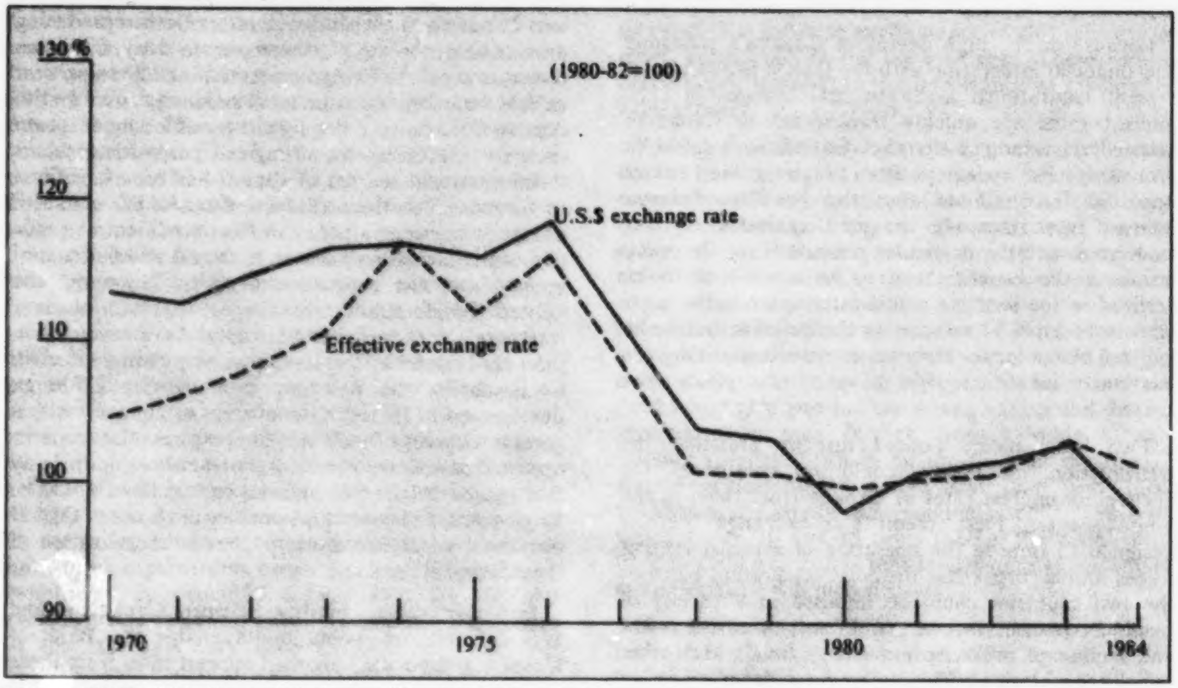
SOURCE OECD, *Main Economic Indicators: Historical Statistics;* and Morgan Guarantee Trust, *World Financial Markets.*

This underlines the crucial role played by expectations and by confidence in a country's economy. West Germany, whose economic policy in the late 1970s was different from that of Canada, the United States, or France, was able to maintain world confidence even as it decoupled its interest rates. The numbers speak for themselves. Between 1975 and 1982, a broadly defined monetary aggregate increased by 80 per cent in West Germany, 125 per cent in France, 105 per cent in the United States, and 154 per cent in Canada. The consumer price index rose 36 per cent in West Germany, 79 per cent in the United States, 89 per cent in Canada, and close to 109 per cent in France. It is true that West Germany was also affected by the tradeoff between interest rates and exchange rates as the Deutschemark depreciated, but it was not a freefall, as may have been the case for countries that did not benefit from the confidence of investors.

Finally, the world may be witnessing the emergence of a currency arrangement somewhere between the "optimum currency area" and the "free-floating exchange rate." Major currency areas are emerging, with dominant and subordinate economies. The subordinate economies stabilize their exchange rate with respect to the dominant currency, so as to avoid negative inflationary consequences and disruptions in trade flows caused by exchange rate variability. An exchange-rate-oriented policy, although it appears to negate the *raison d'être* of government policies – i.e., the pursuit of domestic economic growth and social progress – may be justified in certain circumstances. A

Chart 5-12

Real U.S. Dollar Exchange Rate and Real Effective Exchange Rate of the Canadian Dollar, 1970-84



SOURCE OECD, *Main Economic Indicators: Historical Statistics;* and Morgan Guarantee Trust, *World Financial Markets.*

fall in the value of a currency on foreign exchange markets may reflect domestic difficulties, and measures to stabilize that value are, in those circumstances, generally beneficial to the domestic economy in the long run. Furthermore, the exchange rate may provide a discipline to correct weaknesses in the domestic economy that might otherwise be lacking. Finally, a stable currency may be very important to foster international trade.

All these factors were important in the French decision to follow an exchange-rate-oriented policy. A number of smaller countries, such as the Netherlands, Belgium, and Austria, also followed a similar course. The main objective was to stabilize the exchange rate of the domestic currency with respect to the Deutschemark, so as to keep an orderly exchange market and thus encourage the development of external trade, so important to the economy of these countries. The monetary authorities in these countries have chosen the Deutschemark because it is the dominant currency in the area and because of the importance of their trade with West Germany.

Besides, there is no direct movement between the Dutch guilder or the Belgian franc and the U.S. dollar; those movements go through the Deutschemark, which is a secondary reserve currency for those countries. Belgium and the Netherlands do not form an optimum currency area, and that is why they do not share the same currency. Having different currencies gives them the possibility of doing some fundamental realignment should their economies get out of tune. Should, for instance, the Dutch economy go in a different direction because of different fundamental factors than those affecting the West German economy, there could be a realignment of currencies within the European Monetary System between the guilder and the Deutschemark. On the other hand, as the mark is floating against other major currencies, such as the pound, the yen, and the U.S. dollar, the guilder and the Belgian franc are also floating against those currencies. The dominant economy – in this case, West Germany – can follow a somewhat more autonomous policy with respect to other dominant economies, such as the United States, the United Kingdom, or Japan; the subordinate economies have an exchange-rate-oriented monetary policy that stabilizes their currency with respect to that of the dominant economy.

Options for Canada

Because of the high degree of Canada's economic and financial integration with the United States and of present institutional arrangements, changes in U.S. interest rates are quickly transmitted to Canadian rates. That is not to say that Canada is helpless in protecting its economy from high interest rates imported from abroad. But the benefits of lower interest rates must be weighed against the costs associated with the particular policy utilized. In many instances the benefits tend to be small and to be realized in the short to medium term, while the costs tend to be large in relation to the benefits, but to be realized in the longer term; as a consequence, they are less easily identified with the particular policy that caused them.

Two basic policy options directly affecting the transmission mechanism could be considered for decoupling interest rates in Canada from those in the United States. First, credit and exchange controls designed to impede the operation of selected market forces and to break the financial integration between the two countries could be imposed in a variety of forms. Second, in the context of freely operating credit and exchange markets, monetary, fiscal, and other policies could, in principle, be formulated so as to reduce domestic interest rates while allowing the exchange rate to seek its market-determined level free from any form of control. In this context, rather than prevent markets from performing their function, as in the case of credit and exchange controls, market forces would be utilized in the transmission of policy initiatives. A third policy option would aim at sheltering the Canadian economy, at least partially, from the undesirable impact of movements in foreign interest rates.

Exchange Controls

A reduction in capital mobility between Canada and the United States might be viewed as an option to regain control over Canadian interest rates. Controlling capital flows does have costs, however, and these may turn out to be particularly high for Canada. For many years, as Canada was building up its economy, it was a net importer of capital. If Canada had been closed to international capital flows during that time, both its stock of real capital and its incomes would be lower now, and it would not have its current developed infrastructure. Also, over most of that period interest rates would have had to have been higher, as the financing needs of Canadians could not have been satisfied from domestic sources at prevailing rates of interest.

Even if controls were directed exclusively at preventing capital outflows in the context of a weakening currency on foreign exchange markets, they could discourage foreign investors from bringing more funds into Canada and Canadian investors from repatriating monies held abroad. Furthermore, to deny Canadian investors access to foreign markets would be to prevent capital from flowing to its more productive uses and to deprive Canadians of the highest possible rate of return on their investment. As a long-run proposition, access to international sources of capital has been beneficial to Canada. For these reasons, Canada has pursued, except in wartime, a policy of free movement of goods and capital across its borders. It should also be remembered, from the experience of West Germany, the United Kingdom, and even France, that controls over international movements of capital have more often than not been leaky and have generally been ineffective in insulating the domestic economy from foreign developments. In the case of Japan, controls had a certain degree of success as long as the country operated as a closed economy. Furthermore, in this day and age, to restrict international capital flows would be to go against the developments in most other OECD countries, which are moving towards liberalization of their financial markets.

Imperfect substitutability between Canadian- and U.S.-denominated assets would enable the Bank of Canada to decouple Canadian interest rates from those in the United States temporarily by changing the composition of the stock of outstanding assets and thereby modifying the risk premium demanded to hold Canadian assets. But it would be very difficult to break the substitutability between Canadian- and U.S.-denominated assets while maintaining the mobility of capital across borders. That substitutability is the result of many years of integration between Canada and the United States, with each party acquiring a good knowledge of the other's practices and institutions, as well as a high degree of confidence in the other's economy and financial developments.

Letting the Dollar Go

Many are urging the Bank of Canada to allow a narrowing of the interest rate differential between Canada and the United States and to accept a lower dollar. In this case, benefits would arise from both the decline in interest rates and a lower exchange rate resulting from capital outflows. In a free market system such as Canada's, interest rates can only be lowered by an increase in the rate of growth of the money supply. This could contribute to inflation and inflationary expectations, which in turn would negate the beneficial impact of a lower interest rate and exchange rate. Furthermore, the smaller differential in interest rates can be achieved if, and only if, the decline in the dollar gives rise to expectations of future appreciation.

Simulations using the CANDIDE Model 3.0 of the Canadian economy support such a scenario. In one simulation, short-term interest rates were held 100 basis points lower than in the base case for the period 1985-95 through a continuous, faster increase in the money supply. The results suggest that real investment would increase at first, but the rate of increase would decline after 1989. After 1994, real investment would fall below the base case level. The cumulative impact is very small. The decline in real investment occurs despite lower real interest rates throughout the simulation period. Exports measured in current dollars increase throughout; in real terms, however, the increase is not large, and exports start to decline after 1989. Imports in real terms decline throughout the period. The price level increases over time at an accelerating rate. This build-up of inflation and inflationary expectations tends to reduce consumption, which in turn has a negative impact on investment, almost offsetting the positive impact of lower real interest rates. An increase in expected inflation pushes up the saving rate, reduces consumption, and reduces investment expenditures because a large proportion of investment is demand-induced. The fall in the exchange rate is almost exactly matched by inflation, so that there is very little movement in the real exchange rate and, of course, very little increase in real exports.

In an open economy with a freely operating exchange market, the lowering of domestic interest rates immediately produces an outflow of capital that puts further downward pressure on the exchange rate. The lower exchange rate reinforces both actual and expected inflation. Increased inflationary expectations in turn tend to lower the exchange rate further, thus leading to a continuous decline in the nominal exchange rate and to a continuous build-up of inflation and inflationary expectations.[31]

The most positive effect is a very slight decrease in the unemployment rate. However, the increased employment is obtained at the expense of a decline in real disposable income and real wages. This policy approach turns out to be a failure mainly because the beneficial effects of lower interest rates are negated by the build-up of inflationary expectations and inflation.

The lower differential between Canadian and U.S. rates in recent years could not be maintained because Canada did not benefit from investor confidence and because the expected appreciation of the Canadian currency did not develop. To assess the importance of investor confidence in the Canadian economy, a second simulation was run with the same decline of 100 basis points relative to the base case but this time incorporating more favourable expectations. The results suggest that the exchange rate would not decline by as much and that the real exchange rate would even increase. The inflation performance in this scenario is much better than in the previous case. These results dramatically underscore the importance of favourable expectations.

Letting the dollar depreciate is no guarantee that the decline will give rise sooner rather than later to expectations of appreciation of the Canadian currency and, therefore, will permit the narrower interest differential to be maintained over time. One expert has noted that the decline in the exchange rate may have to be rather substantial and could lead to "unacceptable external inflationary pressures."[32] Furthermore, a sudden change in monetary policy that would let the dollar decline while trying to maintain lower interest rates could give rise to "the wrong expectations" and precipitate an even further drop in value of the Canadian dollar. Even if, on the basis of the fundamental performances of the Canadian and U.S. economies, the equilibrium nominal exchange rate is, say, between 70 and 75 cents (U.S.), the dollar may have to drop well below that level before expectations of appreciation will indeed arise.

A one-year decline in interest rates, as opposed to a lower level maintained over time, offers fewer benefits but also generates fewer costs. The money supply only increases at a faster rate in the first year. Over time, the interest rates and most other variables return to their base case levels, but the price level remains permanently higher. While the exchange rate initially declines by more than the increase in prices, over the long term it remains just below the base case level, implying no long-term effect on the real exchange rate. The impact on exports is positive only in the initial period, turning negative thereafter. Real investment at first increases, reaching a peak in 1987, and declines thereafter to below the base case level. The result is a cumulative negative impact over the simulation period. Employment first rises above, then declines below, the base case level so that, over the entire simulation period, there is a net loss in employment.

Here again, it is the impact of inflationary expectations that makes the costs of such a policy outweigh the benefits. Inflationary expectations arise because people associate certain government policies with previous inflationary experience. Both inflation and the expectations of inflation are likely to be lower if the economy is fundamentally strong. In particular, if the economy is experiencing good growth and governments are in a healthy financial position, then faster monetary expansion can take place, at least for a short period of time, without an excessive build-up of inflationary expectations.

These simulations depend very much on the assumption that U.S. interest rates will move relatively smoothly over the period. If Canada were faced with a sudden increase in U.S. interest rates, as has happened in the past, and if this increase were thought to be of a short-term nature, the impact of counteracting monetary policy on inflationary expectations would likely be small. However, if it is a structural change in the United States that has brought the higher real rate of return, Canada cannot resort to temporary measures.

Alternative Policy Measures

The measures that could be used to protect the Canadian economy from high foreign interest rates without breaking the transmission mechanism include the subsidization of selected interest rates, income tax deductibility of interest payments, selective job creation programs, and the enhancement of the productivity of capital, among others.

Subsidization — Subsidization of interest rates to various sectors or industries thought to be interest-sensitive and to be of particular importance for economic growth and social development has been advocated in this and other contexts. Such a policy is currently in effect in France. There are a number of drawbacks, however, with this kind of measure.

If too many sectors were judged to be in need of subsidies, then too few sectors would be left subject to market interest rates. The whole economy would become insensitive to interest rates, which could no longer be used as a policy instrument. Consequently, there would have to be direct credit controls because market forces would no longer control the quantity of credit.

To shield the Canadian economy from the impact of foreign interest rates through subsidies could also result in an open-ended liability to governments, since the amount of the subsidy would increase with foreign (i.e., U.S.) interest rates. In the face of high international market rates it could also become very difficult for governments to refuse subsidies to other sectors, thus further increasing the cost of the program.

While policies to shelter specific sectors through subsidies may appear to have some benefits, their direct costs to governments and the indirect costs associated with the need for additional controls make them unattractive. That is why countries like France are working to reduce, if not eliminate, such subsidies. Moreover, we have shown in a previous report that subsidies may not contribute to the achievement of government economic and social objectives and may only provide the recipient with a windfall gain.[33]

Income Tax Deductibility — It might also be possible to reduce interest costs for consumers and homeowners by making interest payments on mortgage and consumer loans tax-deductible. In the United States, interest income is taxable while interest paid on investments, mortgages, and consumer loans is deductible from taxable income (so long as the taxfiler itemizes the deductions). This policy encourages construction, spending, and thus, to some extent, investment. The fact that interest cost is more broadly tax-deductible in the United States than in Canada may be one reason why high real rates did not have as large a depressing effect south of the border. On the other hand, interest payment deductibility implies a move towards a different tax system.[34] In addition, with interest payments deductible, the tax base is smaller and the tax rate must be higher.

In Canada, the estimated tax loss with interest deductibility, assuming interest rates of between 10 and 12 per cent and an average marginal tax rate of 30 per cent, would have been about $5 billion in 1984. As total income tax paid was $49,433 million, the $5 billion tax loss would have amounted to 10.1 per cent of tax paid. To raise the same revenue under interest cost deductibility would have required an 11.2 per cent increase in tax rates on other income.

Finally, the tax deductibility of interest payments would be regressive: it would benefit those least in need and would not serve the needs of low-income borrowers. It has been shown that low-income people borrow less than those with higher incomes. Furthermore, this measure would benefit more taxpayers in the higher tax brackets and would not benefit those with little or no taxable income. The gain to high-income earners could be limited, however, by imposing a ceiling on the allowable deduction.

Job Creation and Other Measures — High interest rates are a source of concern because of their negative impact on employment and growth. To counteract the undesirable effects of imported high interest rates, governments could embark on direct job creation programs. In last year's Review, we showed the positive impact of such programs, even in the context of high interest rates. Another alternative might be to secure higher rates of return on investment. One way would be to improve productivity in Canada – an area dealt with in Chapters 3 and 4 of this Review. Last but not least, all simulations have pointed out the importance of building up confidence in the Canadian economy.

Conclusion

Canada's interest rates are very sensitive to movements in U.S. rates. Over the long run, the spread between Canadian and U.S. rates can only be narrowed through some fundamental improvement in Canada's economic performance that will inspire investor confidence. Our analysis has shown that there is not much to be gained through continuous depreciation of the Canadian dollar. Given the integration of the Canadian economy with that of the United States, its openness to the rest of the world, and the role of exports in its economy, it is crucial to lessen the variability of the dollar on foreign exchange markets. To achieve such an objective and to improve the fundamental performance of our economy, the exchange rate might be an important intermediate target to watch. It provides a useful signal of the health of the Canadian economy and of the impact of monetary and fiscal policy; it may also offer the discipline to implement necessary measures.

Considering the exchange rate as an important factor does not necessarily mean that interest rates in Canada will be tied to those in the United States. Indeed, under certain circumstances, the fundamental indicators of the Canadian economy may turn out to be stronger than those of the U.S. economy. Canadian interest rates could then be lower than those in the United States without having a negative impact on the movement of the exchange rate.

To achieve such a situation, Canada should work towards improving productivity, its inflation performance, the budgetary situation of governments, and the social condition of its residents. Indeed, all of these variables have an impact on the relative value of the Canadian dollar and would take pressure off the level of interest rates as a counterbalancing instrument used in smoothing the fluctuations of the Canadian dollar.

As confidence is regained in the Canadian economy, the interest rate differential could be successfully reduced. The Bank of Canada should not, therefore, blindly attempt to match U.S. interest rate movements, nor should it focus predominantly on efforts to avoid exchange rate movements. The Bank should test the market for any increase in confidence and take advantage of any room for manoeuvre to reduce interest rates. On the other hand, those who call for lower interest rates in Canada should be clear about the benefits to be gained from such a policy. As the simulations with CANDIDE Model 3.0 show, in many cases the expected benefits from increased exports and investment are not realized, while at the same time inflationary expectations impose rather heavy long-term costs. Lower interest rates should not be viewed as an end in themselves. The achievement of the ultimate objectives of government – a higher standard of living, more employment, and faster economic growth – may be possible through the use of policies other than an interest-rate-oriented monetary policy.

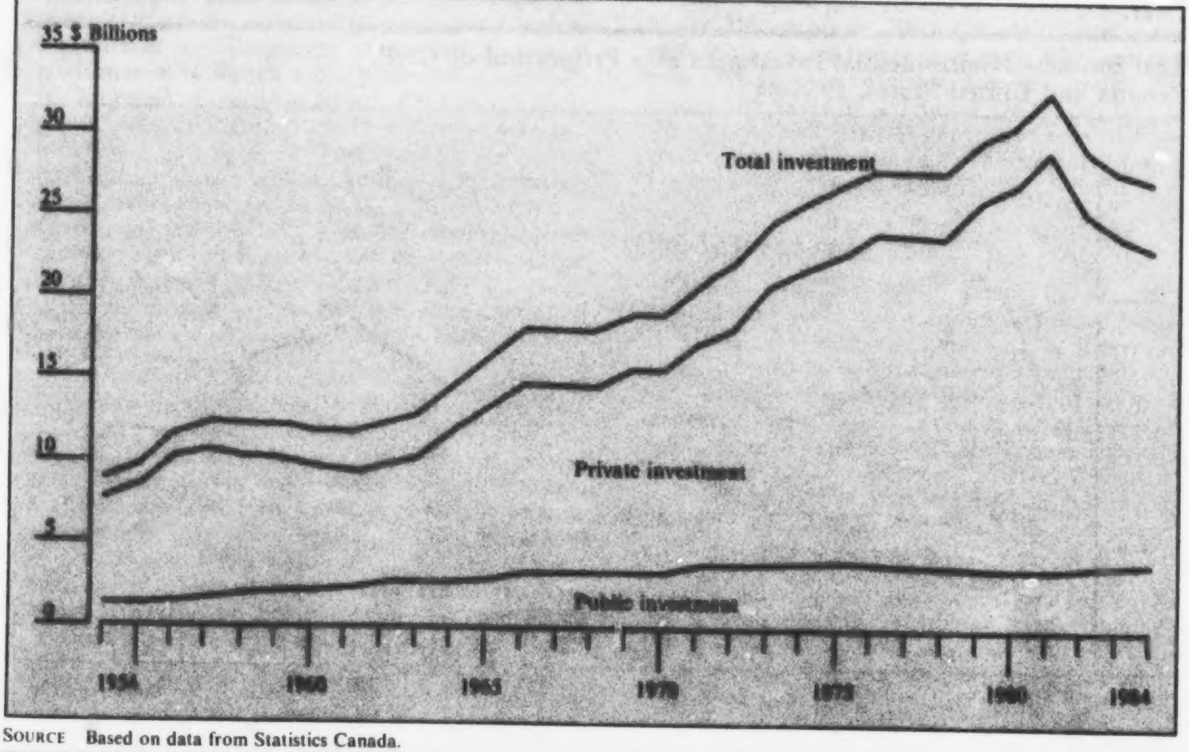
6 Investment in Perspective

As Canada's economic recovery matures, the question arises whether the weaker investment performance of recent years is a temporary phenomenon or whether it is the manifestation of some more fundamental structural change in the economy. Canada's poor investment performance in the period 1981-84 began during the downward phase of a short-term business cycle and was affected by the action of some more fundamental long-term factors. The upward movement in the business cycle explains, in part, the recovery of investment that is projected for all areas between 1985 and 1988-89, but those long-term factors will contribute to keeping the investment/GNP ratio at a lower level than in the 1960s.

Investment performed poorly in 1984. While there was some improvement relative to 1982 and 1983, the gain was not substantial enough to contribute to economic growth. In fact, gross capital formation, measured in 1971 dollars, declined from about $32 billion in 1981 to about $28 billion in 1984. Real business investment in machinery and equipment and in structures fell from about $23 billion in 1981 to just over $18 billion in 1984. Not since 1978 had such low levels been recorded. In brief, investment performance in the current recovery has been quite different from that in previous recoveries.[1] Instead of surpassing its pre-recession peak, capital formation still lingers well below the high reached in 1981.

Chart 6-1

Investment in Canada: Total, Public, and Private, 1954-84



Source Based on data from Statistics Canada.

In contrast, the weakness in public-sector investment reflects a longer-term trend. Over the last 30 years or so public investment has stood still in real terms, while private investment rose sharply until 1981 and declined thereafter (Chart 6-1). Public outlays on structures and on machinery and equipment declined continuously from about 14 per cent of total public spending in the mid-1960s to half that figure today.[2]

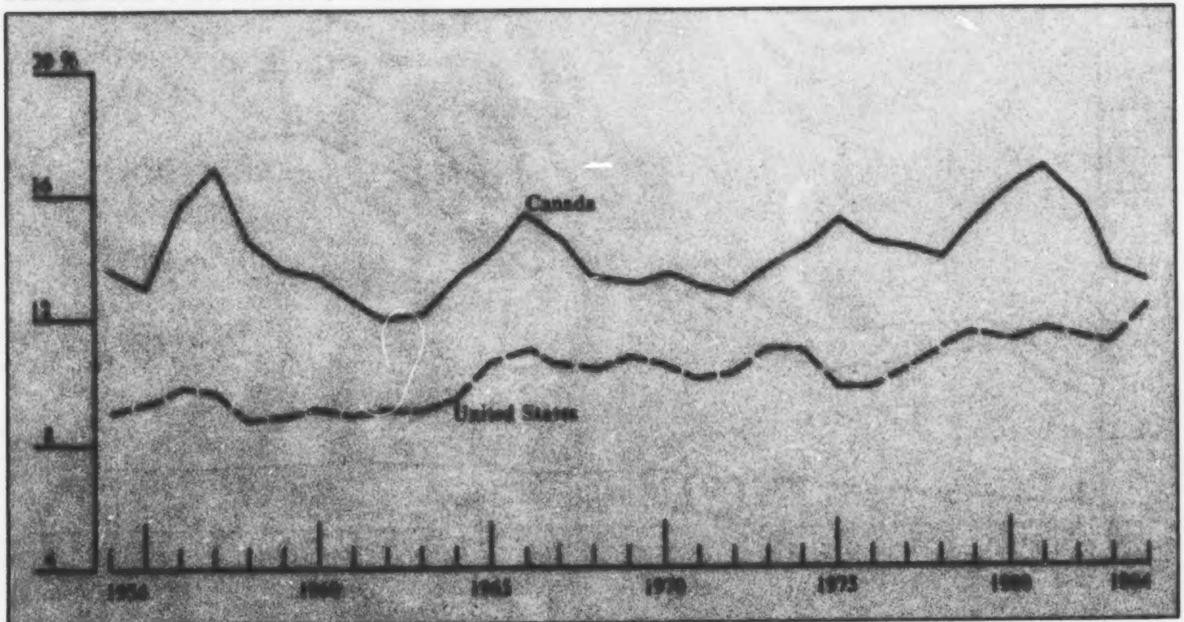
Canada's investment performance in recent years appears even more lacklustre when compared with that of the United States, where the economic recovery has been much stronger than in this country. The United States benefited from a stronger investment performance in 1983 and 1984. Like Canada, the United States registered an investment peak in 1981, but this was followed by a relatively smaller decline in 1982. U.S. real business investment increased by 2.5 and 20.3 per cent, respectively, in 1983 and 1984. This led to a record $205.7 billion outlay (in 1972 dollars) on capital formation in 1984.

As a percentage of GNP, real business nonresidential investment in Canada has historically been higher than in the United States (Chart 6-2). The higher ratio in Canada is attributable, in large part, to this country's industrial structure, in which capital-intensive primary industries occupy an important position. The ratios in both countries have generally followed a similar pattern, except during the periods 1973-75 and 1981-84. In 1973-75 investment in the United States registered a strong decline, whereas in Canada it increased. The more recent period witnessed a collapse in the Canadian ratio and a rise in the U.S. ratio. This contributed to an even greater narrowing of the gap between the Canadian and U.S. investment/GNP ratios – from 5.2 percentage points in 1981 to 0.6 points in 1984.

The comparison with the United States – a favourite benchmark for Canadians – should not, however, obscure the fact that Canada occupies a respectable position among the OECD countries. Over the period 1961-82 Canada ranked fourth – behind Japan, West Germany, and France but ahead of the United States – with respect to the share of real GDP devoted to gross fixed capital formation (Appendix Table D-1). In the

Chart 6-2

Real Business Nonresidential Investment as a Proportion of GNP, Canada and United States, 1954-84



SOURCE Based on data from Statistics Canada for Canada, and from the U.S. Department of Commerce for the United States.

period 1974-82 Canada ranked second, behind Japan. Its performance with respect to private nonresidential investment was also well above that of other major OECD countries. Canada lagged behind France, West Germany, Japan, and Italy with respect to the ratio of residential investment to real GDP, but stood ahead of the United States and the United Kingdom.

International comparisons provide an appropriate perspective for the analysis of domestic problems, but they should not overshadow the detailed consideration of Canadian data, especially when concentrating on long-term trends. Looking ahead, growth in investment in Canada is likely to be slower in the period 1985-95 than over the last 20 years. According to the current base case using CANDIDE Model 3.0, the aggregate investment/GNP ratio, which reached a peak of 23.8 per cent in 1981, is expected to be only 20.5 per cent, on average, during the period 1985-95, when the unemployment rate is expected to average 8.5 per cent. These projections are based on current trends and policies, but the investment outlook could brighten up should some heretofore hidden strengths manifest themselves.

The Importance of Investment

The importance for the whole economy of expenditures on capital goods cannot be overemphasized. The purchase of a piece of machinery or equipment and the construction or enlargement of a plant to expand production or to launch a new product line constitute the backbone of economic growth. Obviously, without plants and equipment, products cannot be manufactured to meet the demand of consumers, and new product lines cannot be introduced to respond to their ever-changing needs and tastes. New plants often mean more jobs, either directly in the newly built or extended plants, or indirectly through spillover effects on other sectors. Technological innovation is integrated in the production process through investment. And increases in the capital stock are an important contributor to productivity.

As investment represents the renewal and extension of the productive capacity of a nation, it is not surprising that economists, business analysts, and policymakers view it as a major determinant of economic performance. In its early stages, recoveries in Canada are often led by export demand, in addition to consumer demand. The influence of this factor was particularly strong during the most recent recovery, which was fueled by large increases in exports to the United States. Later, it is investment that must take on the task of enabling the economy to enter into a period of sustained expansion. Indeed, there cannot be sustained economic growth without the extension – or, at least, the renewal – of productive capacities.

A recent study strongly suggests the existence of a link between change in the private nonresidental capital stock and change in GDP in the United States, Japan, France, West Germany, and the United Kingdom.[3] Comparing the period 1973-84 with the period 1960-73, the study shows a decline in both variables in all five countries. For the United States, the declines were 0.3 and 1.6 per cent, respectively, for the private nonresidential capital stock and GDP growth. For Japan, they were 5.1 and 5.9 per cent. Although Canada appears to have been a notable exception, this does not invalidate the existence of a link between investment and growth.

The private nonresidential capital stock in Canada grew at a higher average annual rate in the period 1973-84 than in the period 1960-73. Like its five OECD partners, however, Canada recorded a significant decline in GDP growth in the period 1973-84. Why did the faster increase in investment not give rise to faster growth? The answer lies in the fact that investment in Canada took place mainly in sectors with lower or declining total factor productivity. For example, a larger proportion of investment was directed at mining – the industry with the worst productivity record of all – in Canada than in the United States. The share of total investment going to manufacturing – a sector with a better productivity record – dropped dramatically in Canada, while it rose in the United States. Thus Canada's worse growth performance in relation to investment, when compared with that of other countries, does not invalidate the crucial role played by investment. On the contrary, one shudders to think what the impact on Canada's growth performance would have been, had there not been an investment surge in the period 1979-81.

Public Investment

Measured against GNP, public investment in Canada has been following a downward trend since the mid-1960s. This was preceded by a period of very rapid annual growth of public investment (excluding utilities) – 9.8 per cent a year between 1954 and 1962, compared with 2.7 per cent a year for private investment. Between 1956 and 1962, the relative importance of public investment rose from 12.5 to 21.7 per cent of total investment. That share dropped gradually to a low of 11.5 per cent in 1981, and it has been hovering around 14 per cent since then.

The rapid growth of public investment in the 1950s and early 1960s can be related to the building of Canada's social and economic infrastructure. For example, outlays for school construction rose sharply from $315 million (in 1971 dollars) in 1961 to $572 million in 1962 and continued on an upward trend, reaching $769 million in 1968. They then embarked on a downward trend and had fallen back to $275 million by 1983. Investment in university construction reached a peak of $339 million in 1968, moving downward thereafter; in 1974 it amounted to only $78 million. Outlays for construction of hospitals followed a somewhat different pattern, however. They hovered around $210 million a year in the 1960s and 1970s but have exceeded $300 million since 1980.

Public investment in the 1950s and 1960s responded to a new social and economic philosophy, aimed at providing every Canadian with a better standard of living, better education, better health care, and a better infrastructure. At the same time, the baby boom forced governments to increase the stock of public capital. The late 1950s and 1960s were years of broadening the government mandate in the context of a healthy economy. With the 1970s, however, came years of comparatively slower growth, escalating inflation, changing demographic and sociological factors, and serious financial constraints. In particular, the slowdown in demographic growth and the aging of the population reduced the need for school and university facilities. Fiscal requirements put severe constraints on the capacity of government to engage in large investment projects. The only social need that took on greater importance was that for hospitals and care centres for the elderly.

Residential Construction

Shifting trends in housing investment have been evident over recent decades. The housing sector did not escape the prolonged slump that marked the economy during the late 1950s, but real expenditures rose during the following decade. The pace quickened during the first part of the 1970s, when growth in residential construction increased considerably. During the period 1955-63, residential investment hovered around $2.8 billion (in 1971 dollars); it rose to $4.2 billion in 1969 and to $6 billion in 1973, remaining at that level until 1981. Since then, there has been a decline. In 1984 real residential construction expenditure was 25 per cent below the peak recorded in 1976, investment having declined in six of the eight intervening years. In fact, the 1981-82 recession hit the residential construction sector hard, as its share of total investment fell to 15.5 per cent in 1982 from 23.8 per cent in 1976. The precipitous decline in the early 1980s has been replaced by a period of relative stability.

Nonresidential Business Investment

Total business nonresidential investment generally followed a rising trend over the 26-year period from 1954 to 1981. It registered prolonged growth pauses in the late 1950s and early 1960s, in 1967, and in 1976 (Chart 6-2). Investment growth recorded its strongest setback in the period 1981-84. When measured against GNP, the decline in that period is quite similar, though not yet equal in magnitude, to the drop recorded between 1957 and 1962.

Although all sectors of economic activity have registered positive growth in investment over the past 30 years, this is not the case when that performance is measured against GNP. The mining, financial, and commercial services sectors saw their investment/GNP ratio rise over the period 1954-84, while the ratio for utilities and communications remained stable and that for manufacturing, transportation, agriculture, retail and wholesale trade, and construction declined. The main factors influencing private investment performance have been the actual and anticipated demand, and interest rates in the short run, and population movement, export markets, the prices of primary materials, and technology, among others, in the long run.

Mining

Investment in the mining sector (which includes oil and gas) has progressed along a rising trend over the past 30 years. This comes as no surprise, as Canada is a country richly endowed in natural resources, whose exports are, to a large extent, based on the primary sector. Particularly notable is the sharp rise in investment that began in 1973. From a level of about $1.5 billion (in 1971 dollars) that year, investment in mining rose to $2.7 billion in 1979, $3.7 billion in 1980, and close to $4 billion in 1981; this was followed by a decline in 1982, 1983, and 1984. Capital expenditures in mining follow closely the evolution of world prices for primary products and, of course, the progression of Canadian exports in this area. This was particularly evident during the 1970s. For example, the price of metal and mineral products rose threefold between 1972 and 1980; it declined in 1981 and 1982 but had regained the lost ground by 1984. In 1973 alone, the international price of oil nearly quadrupled, from $3.01 to $11.65 (U.S.) a barrel; it kept rising throughout the 1970s, reaching $34.00 (U.S.) a barrel in 1981; it began to decline after attaining that peak.

The increase in investment in the mining sector in the mid-1970s and later was driven mainly by the performance of the oil and gas sector (Table 6-1). The strong rise in world oil prices and the accompanying threats to a continuous supply from foreign sources led to this increased activity. Exploration for both conventional and synthetic oil increased dramatically. New pipelines were built, and the capacity to extract gas was also expanded. Net cash expenditures by the petroleum industry on exploration and development rose dramatically during the late 1970s – from $1.2 billion in 1973 to $7.9 billion in 1980. They stabilized at that level until 1983. The increase in world prices resulted, of course, in some of the more expensive

Table 6-1

Investment in Petroleum, Agriculture, and Manufacturing, Canada, Selected Years, 1955-84

	Petroleum		Agriculture		Manufacturing	
	Amount	As a proportion of GNP	Amount	As a proportion of GNP	Amount	As a proportion of GNP
	($ Millions)	(Per cent)	($ Millions)	(Per cent)	($ Millions)	(Per cent)
1955	337	0.8	794	1.8	1,504	3.4
1960	342	0.6	848	1.6	1,641	3.1
1965	582	0.8	1,140	1.6	2,697	3.9
1970	722	0.8	876	1.0	3,376	3.8
1975	1,063	0.9	1,755	1.6	3,827	3.4
1980	2,748	2.1	1,985	1.5	4,177	3.2
1984	2,682	1.9	1,519	1.1	3,094	2.2

SOURCE Based on data from Statistics Canada.

sources of oil becoming more economical to exploit, and it justified the increased investment in less conventional sources.

Over the past few years, investment by the petroleum industry has declined markedly. The National Energy Program (NEP), introduced in 1980, dramatically slowed exploration and investment in that area. Its negative impact was later reinforced by an oversupply of oil on world markets and by a decline in world oil prices. The economic conditions that had spurred the boom in the late 1970s vanished during the 1980s. Furthermore, several Canadian-controlled companies – Dome Petroleum, for example – were in financial trouble and could not spare the capital needed to undertake the exploration and development of new oil fields.

Finance, Insurance, and Real Estate

Investment in the finance, insurance, and real estate sector increased dramatically throughout the 1970s, outperforming total investment from 1971 on and reaching a peak in 1981. To a large extent this was attributable to the expansion of the Canadian financial sector, which resulted in the construction of new offices and branches by banks, trust companies, and life insurance companies. It was also the result of spending on technological improvement, such as the computerization of the Canadian banking system and, more generally, the introduction of new technology in the area of the transfer of information and funds in the financial world.

Commercial Services

The commercial services sector has also seen a strong rise in investment over the past 30 years. From $134 million in 1954, real investment rose to $2.3 billion in 1980. Over the past two years, the commercial services sector has exhibited the best investment performance of all the sectors of economic activity.

Utilities

Investment by utilities – specifically, private and public electricity companies – registered sustained growth throughout the 1970s, buoyed by large outlays in hydroelectric capacity and nuclear complexes. Corporate planners within the utilities were strongly influenced in the mid-1960s by projections of a 7 per cent annual increase in the demand for energy. It was generally believed that demand for electricity would double between 1965 and 1975. To meet this demand, utilities (particularly in Ontario and Quebec) embarked upon large-scale investment programs. In Quebec major hydroelectric complexes came on stream in the 1970s and early 1980s – Manicouagan-Outardes in the mid-1970s, and James Bay between 1980 and 1984. The Churchill Falls development also began producing in the mid-1970s. In Ontario several thermoelectric stations began operating during the late 1960s and the first half of the 1970s – Lambton in 1969, Nanticoke in 1973, and Lennox in 1976. At the same time, the nuclear complex at Pickering started producing electricity gradually between 1971 and 1973, and the Bruce nuclear station came on stream in 1977 and 1978. These large projects gave a boost to investment in utilities and in other sectors, as well.

By the end of the 1970s, the fundamental factors that had led to investment in megaprojects in the utilities sector had changed. The strong rise in the price of energy had reduced demand considerably, and the subsequent drop in world oil prices had prompted some shift back to oil and away from other sources of energy. At the turn of the decade, electricity companies found themselves with substantial excess capacity, although it is not clear how great that excess was, when measured against peak demand. As a result, investment has leveled off and is not expected to return to the heights of the 1970s.

Wholesale and Retail Trade

Investment in wholesale and retail trade outperformed total investment in the 1960s and the 1970s but has slowed down somewhat since 1975. Capital outlays have contributed to the expansion of retail facilities and to the introduction of new technology in that sector.

In the retail industry, informatics technology has been used for some time to support traditional data-processing functions, such as accounting, payroll, and so on. In recent years, however, technological developments have led to the integration of information systems into all aspects of the retail business. The most visible component of such integrated systems is the computer-based cash register (or "point-of-sale" terminal) linked by telecommunications to a central computer. Such systems are now in use by most major retailers and contribute to an improvement in the efficiency of their operations. Management information based on the data provided by these innovative systems is a valuable asset to the retail business and is indeed a competitive weapon, given its timeliness and accuracy. It enables retailers to identify quickly those items which sell best and those which do not sell, and to adjust their inventory accordingly. Since the resulting inventory reflects consumer demand more accurately, the sales volume is likely to increase. Moreover, such information, when combined with automatic and timely order processing for low-stock items, leads to faster inventory turnaround and reduces inventory levels. This is a significant benefit, particularly in times of double-digit interest rates.

Although such integrated information systems were once available only to major retailers, continued technological advances in informatics, especially in the area of price performance, have made such systems affordable for small and medium-sized businesses as well. Based on personal-computer technology, these systems deliver a degree of efficiency that, 20 years ago, was available only with computers worth over half a million dollars.

Agriculture

Despite the dramatic increase in the degree of capital intensity in production, investment in agriculture as a share of GNP has been on a slightly declining trend over the past 30 years. To some extent, this is related to the decline in the relative importance of the agricultural sector in the Canadian economy. Between 1961 and 1981, the number of farm operations declined by about 34 per cent. On the other hand, the extensive substitution of capital for labour is reflected in the strong increase in investment in that sector between 1970 and 1980 (Table 6-1). Total capital per worker in agriculture rose from about $46,000 in 1971 to $225,000 in 1981. In constant prices, total equipment and machinery per worker almost doubled between 1970 and 1980.

Manufacturing

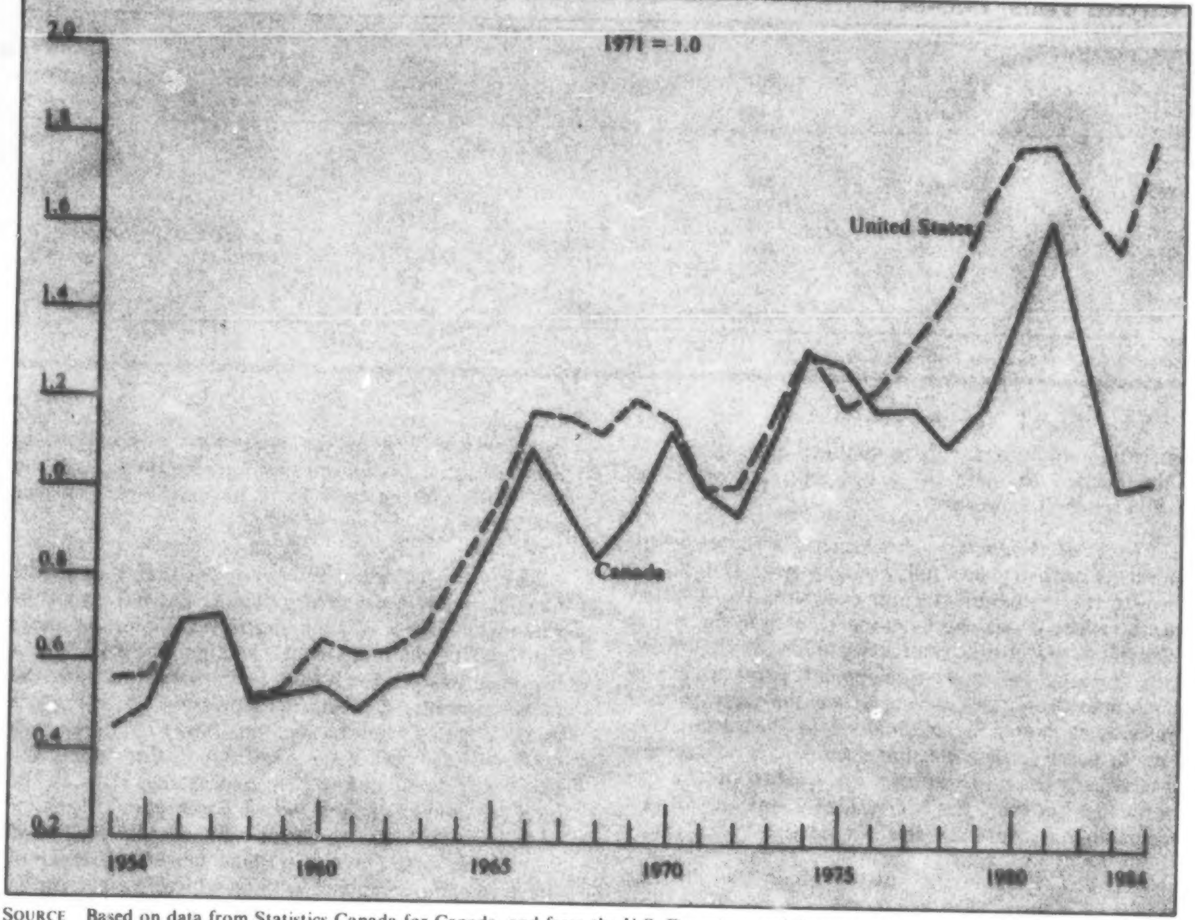
But it is the performance of investment in the manufacturing sector that is of greatest concern. Although investment in manufacturing progressed on a rising trend from 1954 to 1984, it has been losing ground as a proportion of GNP since the early 1970s (Table 6-1). While the ratio of manufacturing investment to GNP had registered a decline between 1956 and 1960, the most recent drop is the largest recorded in the past 30 years. Real business nonresidential investment in the manufacturing sector declined in absolute terms between 1974 and 1978; it rose in each of the subsequent three years, declined sharply between 1981 and 1983, and has picked up only slightly since then. Furthermore, net investment in 1983 and 1984 was the lowest for the whole period. In 1984 net investment in manufacturing was negative: it was not even sufficient to maintain the productive capacity of the manufacturing sector.

The weakness of investment in manufacturing becomes even more apparent when the Canadian situation is compared with that in the United States. From 1946 to 1975 the Canadian and U.S. indices of manufacturing investment generally moved in unison, and the levels were also relatively close. Since 1975, however, the Canadian index has fallen below that of the United States, and the gap between the two has been widening since 1981 (Chart 6-3).

Motor Vehicles — Investment in the motor vehicle industry has grown at a faster pace than total manufacturing investment, and the gains have been particularly dramatic since 1980 (Table 6-2). Two factors have largely contributed to this above-average performance. First, there has been, in recent years, an internationalization of the automotive industry's markets. This was helped by the convergence of worldwide consumer demand for a similar kind of product, opening up competition on a world scale. Second, investment in the motor vehicle industry was demand-driven in the second half of the 1970s and in the early 1980s. The somewhat delayed car-replacement cycle had a positive impact on sales. The reduction in interest rates also contributed to the boost in

Chart 6-3

Index of Manufacturing Investment, Canada and United States, 1954-84



SOURCE Based on data from Statistics Canada for Canada, and from the U.S. Department of Commerce for the United States.

car sales. Furthermore, an important phase of retooling and plant expansion took place to meet the demand for smaller, fuel-efficient cars, so that the large investments of the 1970s and 1980s in Canada were aimed at meeting changing consumer demands and world competition. About half of the capital expenditures were devoted to retooling or plant expansion, while the other half went to technological improvement in the production process.

Auto Parts — Investment in the auto parts industry did not do as well as that in motor vehicles (Table 6-2). With the exception of a strong upsurge between 1976 and 1980, related to new plant expenditures by the large auto makers, investment growth in auto parts was less than the growth of total investment in manufacturing. Investment by independent manufacturers of auto parts has followed a stable, slowly rising trend. In general, the decision to invest is motivated by the greater demand for auto parts, but it may also result from pressure by the large motor-vehicle companies to modernize auto parts plants and to introduce modern technology in production and management. The introduction of new office technology – such as paperless computerized ordering systems – and technological improvements in the production process have, to some extent, been imposed by the large auto manufacturers as a condition for maintaining contracts with auto

Table 6-2

Index of Investment, Selected Manufacturing Industries, Canada, Selected Years, 1955-84

	Total manufacturing	Motor vehicles	Motor vehicle parts	Chemicals and chemical products	Non-electrical machinery	Electrical machinery
(1970 = 1.000)						
1955	0.445	1.441	0.067	0.322	0.327	0.505
1960	0.486	0.902	0.082	0.546	0.444	0.449
1965	0.799	3.249	0.705	1.171	0.744	0.766
1970	1.000	1.000	1.000	1.000	1.000	1.000
1975	1.134	1.693	0.348	2.401	1.451	1.000
1980	1.237	2.447	1.980	1.678	1.742	1.272
1984	0.916	6.348	0.518	2.011	1.104	1.550

SOURCE Based on data from Statistics Canada.

parts manufacturers. These changes have also been implemented to maintain a competitive position on world markets, however.

Electrical Products — Investment in the electrical products industry has followed the general trend in investment in manufacturing, except in the last few years, when it has been stronger, buoyed by active demand from utilities and households. With utilities cutting back on their development plans and with household formation slowing down, the same pace of investment cannot be maintained in the future. The key to survival in a declining market is to increase productivity and to improve the quality of the end product. Thus there has been a high component of new technology in investment in this industry.

Chemical Products — Investment in the chemical products industry has registered a rapid growth in recent years, as a result of the boom in the oil industry in Canada and of the rationalization of the petrochemical industry at the world level (Table 6-2). With favourable oil prices, new petrochemical plants serving demand on a world scale have been put in place, and their location has been shifted towards the energy-rich nations. With some oversupply now anticipated, there has been a cutback in the construction of new plants in Canada.

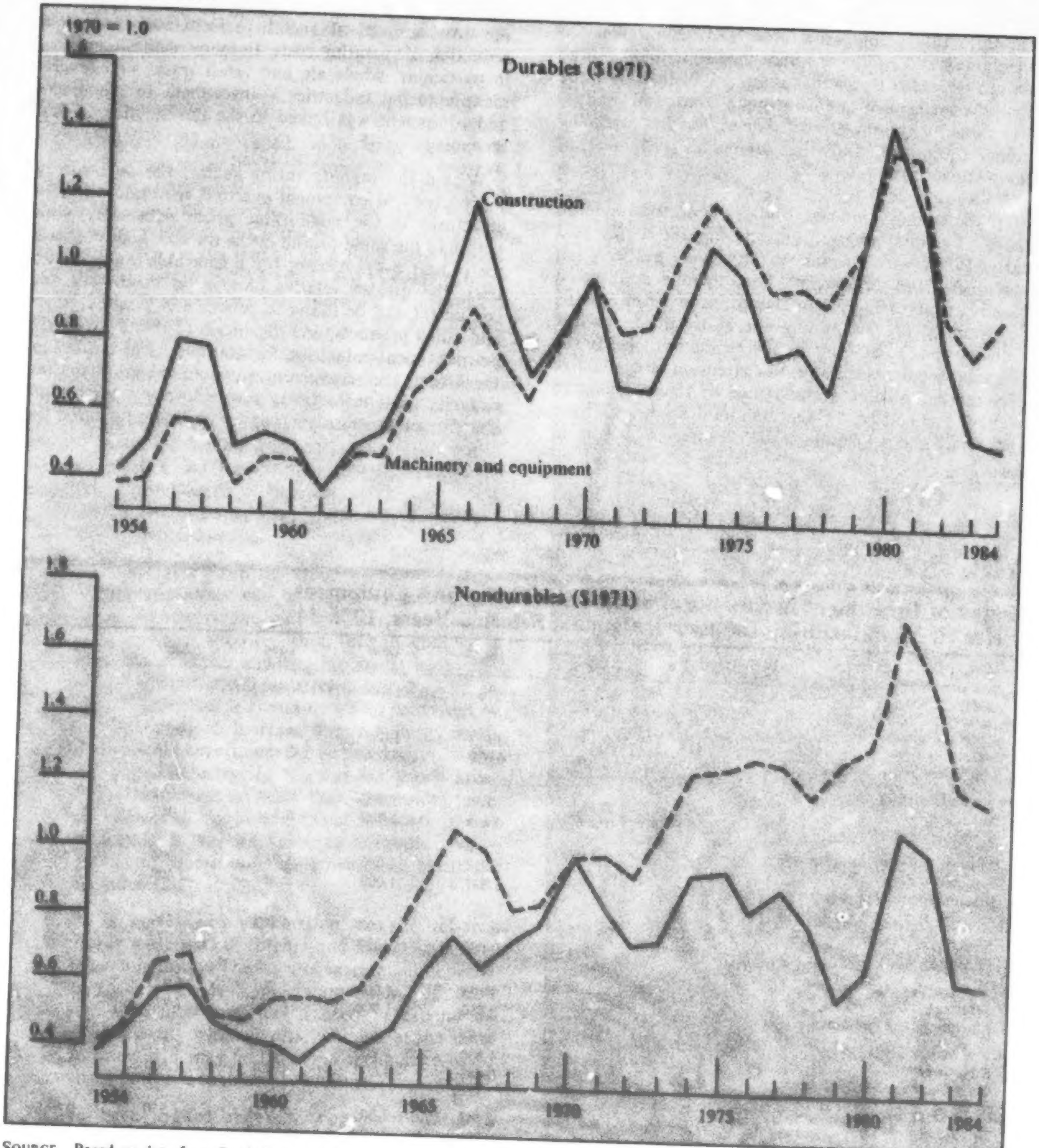
Machinery — Investment in the machinery sector outperformed total investment in manufacturing throughout the 1970s (Table 6-2). Investment in this sector is generally demand-induced and lags behind the general movement in the economy by 12 to 18 months. The producers in this sector are suppliers of machinery and equipment to other industries; thus they respond to investment spending by other industries in Canada or abroad. In 1975, about 37 per cent of Canada's machinery and equipment production was shipped to the United States. This proportion rose throughout the late 1970s and the early 1980s to reach almost 49 per cent in 1983.

The years 1979 to 1981 were the best ever in the machinery and equipment industry. The full impact of new technology was beginning to take hold, and more than half of the investment spending was driven by a bright outlook for the future. But in 1981 and 1982 the industry went through a depression. There were massive order cancellations in 1982, as purchasers preferred to pay heavy penalties rather than buy machinery. A number of large companies reduced the level of production and closed down plants. Smaller companies with less room for manoeuvre were forced into bankruptcy. These developments were the result of the recession, combined with overinvestment induced by excessive optimism, poor management, and a lack of feedback from the market.

Some Weaker Industries — Canada's manufacturing investment has been pulled down since the mid-1970s by various industries with weak performance – the furniture and wood industries, primary metals and nonferrous metals, iron and steel (which declined sharply from a peak reached in 1975), metal fabricating (which has dropped dramatically during the 1980s), and textiles (excluding leather). The furniture and wood industries, as well as textiles, have been declining for 10 to 15 years. Thus it is not surprising to see their share in total investment declining. Investment growth in the paper products industry has also been less than total investment growth, except for the period 1978-80. The weakening world demand and the drop of the Canadian share in world export markets have played a role here.

Chart 6-4

Components of Investment in Manufacturing, Canada, 1954-84



SOURCE Based on data from Statistics Canada.

Machinery and Equipment vs. Structures

Investment can take the form of the purchase of machinery and equipment, the construction or extension of a plant, or both. The separate consideration of capital outlays on structures and investment in machinery and equipment may shed some light on the nature of investment – that is, on the distinction to be made between investment intended to expand productive capacity and investment that is aimed at replacing aging equipment and that embodies technological innovations.

In the mining, finance, and trade sectors, a large share of capital expenditures during the 1970s and early 1980s was devoted to structures rather than machinery and equipment. Investment was directed mainly at increasing productive capacity – through the development of new mining operations in the mining industry and the building of offices and branches in the financial sector. Naturally, the extension of productive capacity can also be accompanied by the introduction of new technology. In the communications, utilities, and retail and wholesale trade sectors, as well as in manufacturing generally, a larger share of total capital spending was directed towards the purchase of machinery and equipment. Investment may then have been intended to increase the productive capacity through a shift in the capital/labour ratio or to contribute to improved financial performance through a reduction in operating costs. In many of these sectors – in particular, wholesale and retail trade, and several manufacturing industries – investment in machinery and equipment was linked to the introduction of new technology.

Within the manufacturing sector, the purchase of machinery and equipment overtook investment in new structures in the nondurable goods subsector, while both had the same profile in the durable goods subsector (Chart 6-4). Among the nondurable goods industries, the greater relative outlays on machinery and equipment can be found in rubber and plastics, paper and allied products, and chemicals (Table 6-3). In the petrochemical industries, for example, large outlays on machinery and equipment were aimed at increasing capacity while introducing new technology. Within the durable goods subsector, capital spending favoured the

Table 6-3

Index of Investment in Structures and in Machinery and Equipment, Selected Manufacturing Industries, Canada, Selected Years, 1955-84

	1955	1960	1965	1970	1975	1980	1984
				(1970 = 1.000, based on 1971 dollars)			
Rubber and plastics							
Structures	0.154	0.430	0.413	1.000	0.543	0.628	0.985
Machinery and equipment	0.432	0.616	0.639	1.000	1.418	1.214	1.542
Paper and allied products							
Structures	0.342	0.352	1.037	1.000	0.534	0.664	0.332
Machinery and equipment	0.417	0.426	0.809	1.000	0.761	1.087	0.600
Chemicals and chemical products							
Structures	0.221	0.347	0.713	1.000	1.783	0.900	0.489
Machinery and equipment	0.416	0.731	1.597	1.000	2.976	2.400	3.424
Petroleum and coal products							
Structures	0.662	0.323	0.174	1.000	0.923	0.389	0.523
Machinery and equipment	0.787	0.604	0.638	1.000	4.304	2.527	2.908
Motor vehicles							
Structures	1.107	0.852	3.124	1.000	1.201	1.923	1.184
Machinery and equipment	1.741	0.947	3.360	1.000	2.132	2.915	10.965
Motor vehicle parts							
Structures	0.107	0.146	1.332	1.000	0.758	5.376	0.162
Machinery and equipment	0.063	0.075	0.641	1.000	0.306	1.630	0.555
Nonelectrical machinery							
Structures	0.249	0.426	0.653	1.000	1.224	1.520	0.647
Machinery and equipment	0.366	0.453	0.790	1.000	1.567	1.855	1.337

SOURCE Based on data from Statistics Canada.

purchase of machinery and equipment in the motor vehicle and machinery industries, where new technology was introduced. In the auto-parts industry, the surge in investment spending in 1979-80, attributable to the expansion of capacity by two large auto manufacturers, was reflected in an important increase in outlays on structures.

Foreign Investment

Canada has always relied, to a large extent, on foreign investment for its development. In this context, the question arises whether the recent capital-spending performance in Canada reflects the activities of foreign or domestic investors. Focusing on mining and manufacturing – two sectors that account for a large proportion of total investment in Canada and the only two for which data are available – the separation of investment between domestic and foreign provides a different picture (Appendix Table D-2).

In the manufacturing sector, investment by nonresidents was generally stronger than outlays by Canadian companies, particularly in the nondurable goods industries. In the durable goods subsector, there was a sharper decline in foreign investment relative to domestic capital outlays between 1980 and 1982, followed by a stronger relative increase between 1982 and 1984 (Chart 6-5).

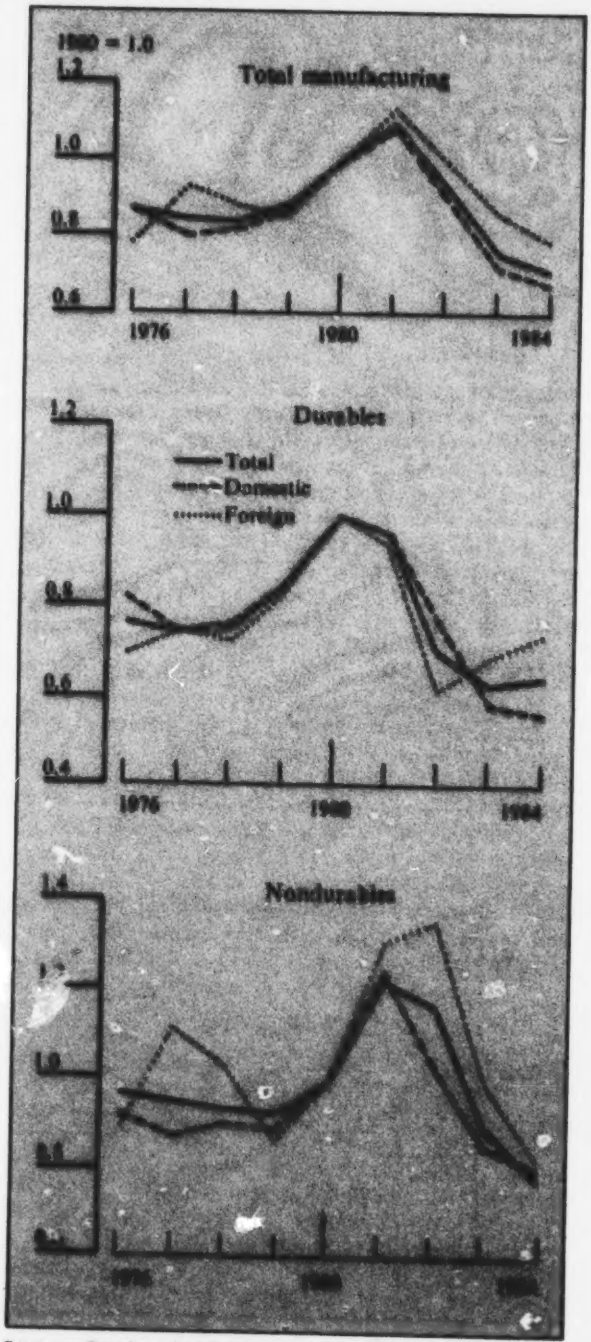
In the nondurable goods subsector, the better foreign investment performance can be traced to the leather, printing, food and beverage, and chemical industries. It is only in the last industry that foreign control is important. In the leather and printing industries, which are largely under Canadian control, the decline in investment is therefore attributable to the behaviour of Canadian companies. It is interesting to note the much sharper decline in investment of foreign origin in the pulp and paper industry. In the durable goods area, foreign investment was stronger than investment from domestic sources in machinery, metal fabricating, and primary metals; it was weaker than domestic investment in the transportation equipment and electrical products industries.

There is no general explanation for the relative strength (or weakness) of foreign and domestic investment in each industry. The level of investment depends on the specific needs and circumstances of each company. One firm may feel a need to expand its productive capacity while another will not, at the same point in time; or it may adopt a new technology while other firms postpone such an expenditure.

Some have argued that the Foreign Investment Review Agency was to blame for the decline in investment. The data for the past eight years show clearly, however, that FIRA cannot be blamed, directly at

Chart 6-5

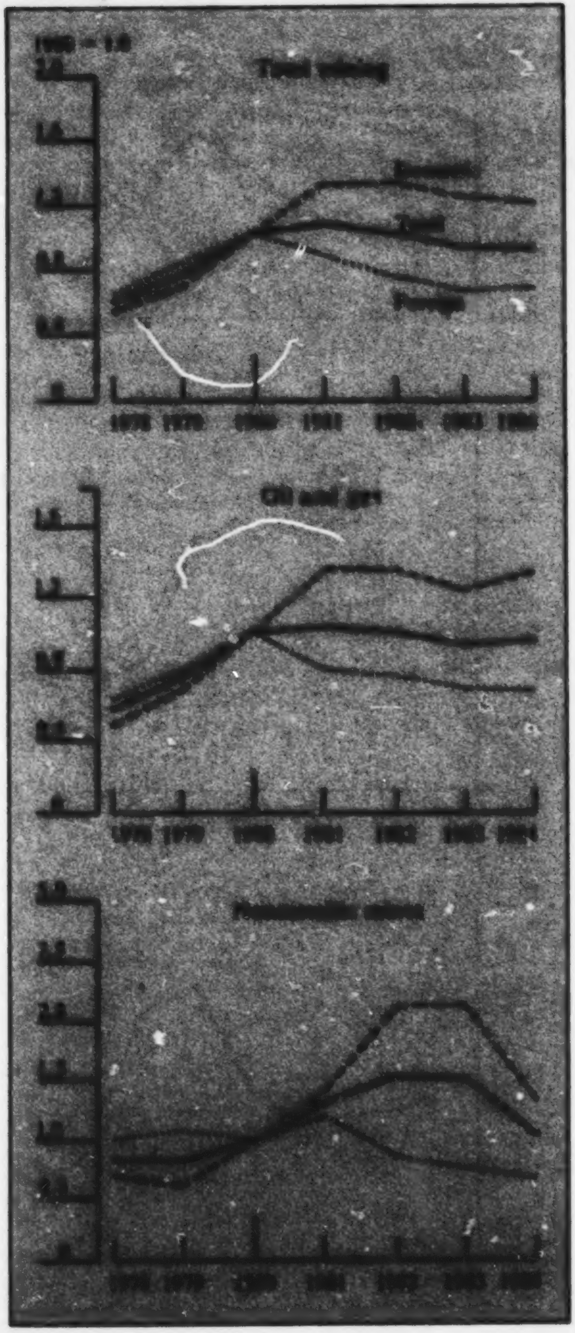
Sources of Investment in Manufacturing, Canada, 1976-84



SOURCE Based on data from Statistics Canada.

Chart 6-6

Sources of Investment in Mining, Canada, 1978-84



SOURCE Based on data from Statistics Canada.

least, for Canada's generally weaker investment performance. The agency may have influenced the investment decisions of certain foreign companies, but its decisions do not seem to have resulted in an overall cutback of foreign investment in the manufacturing sector. That is not surprising, as FIRA only influenced certain new acquisitions by foreign firms. It did not affect the expansion plans of foreign firms or subsidiaries of foreign companies already established in Canada, as long as these plans did not involve the purchase and acquisition of, or a merger with, existing domestic firms.

Contrary to what happened in the manufacturing sector, the foreign-investment picture in the mining sector is much clearer. Foreign investment in that sector has declined sharply since 1980 (Chart 6-6). Domestic investment increased until 1981 and stabilized thereafter. It is often believed that the decline in investment originating abroad has occurred mainly in the oil and gas sector; while this is true for the period since 1980, there have been sharp declines in the other subsectors as well. To some extent, the decline of foreign investment in the oil and gas sector can be attributed to the National Energy Program (NEP), which pulled the welcome mat away from foreign investors in an attempt to Canadianize the oil industry. The weak performance in other mining industries may be linked to the general worldwide decline in activity.

A Tentative Explanation

The evolution of nonresidential business investment can generally be traced to a combination of long- and short-term factors. Among the former are the evolution of Canada's competitive position on world markets, changes in the accumulated stock of capital, long-term population movements, the introduction of new technology, the exploitation and development of natural resources, changes in consumer attitudes, inflationary performance, and other structural transformations in the economy. In the short term, the business cycle – the ups and downs of the economy – is thought to have a direct impact on investment by affecting consumer demand for products, the cost of investment projects, and the cost of financing.

Regardless of the factors that are considered and of the way in which they are combined, the bottom line is that the firm expects to make money from the purchase of a new piece of machinery, the construction of a new plant, or the extension of an existing one. Thus there must be a market for the product that will result from the new investment. If the firm responds to an increase in the demand for its product, its spending activity is then referred to as "induced investment"; if its outlays are aimed at creating a demand for its product, the investment is said to be autonomous. An example of the former is the large investment that occurred in the auto industry in response to the dramatic increase in recent sales. An illustration of autonomous investment is the investment that led to the introduction of microcomputers and the sizable demand for these machines from households and businesses. But existing or anticipated demand is not enough to trigger investment outlays. The firm must also have access to the factors of production needed to undertake the investment project at a cost commensurate with the expected sale price of the product.

Canada's Competitive Position — Canada's international competitive position, as reflected in its share of world exports, reached a peak in 1970 and declined thereafter until 1980. It temporarily regained some of the lost ground in 1982. The emergence of newly industrialized nations – Brazil, Taiwan, South Korea, Singapore, Hong Kong, and so on – is not foreign to Canada's loss, nor is the restructuring of trade patterns with, and within, the European Economic Community. The decline in Canada's position on world markets occurred mostly in the manufacturing sector, where its share dropped from its 1955 level by more than half. All areas were affected, with the exception of the iron and steel products industry. The share of nonferrous metal exports declined from 12.6 per cent in 1971 to 6.9 per cent in 1979 (Appendix Table D-3).

There is a certain parallel between the weakening of Canada's investment performance in the manufacturing sector and the decline in its share of world manufacturing markets. On the one hand, Canada's loss on world markets is attributable, in part, to the growth of new markets in which this country does not participate. Is this parallel fortuitous? On the other hand, a weakening in investment may have rendered Canadian exporters less competitive, and the loss of market share could have contributed to a weaker investment performance because of the ensuing slack in foreign demand for Canadian products.

Capital Stock — In the eyes of some economists, long-term trends in investment are shaped by alternative periods of capital hunger and capital satiation. One analyst has argued that in the United Kingdom, the United States, Sweden, and Japan, there have been approximately simultaneous changes in the rate of investment and that the industrial world has entered a period of investment slowdown that will affect international trade, industrial production, and unemployment.[4] Private investment slowed down during the 1970s because of a large accumulated stock of past investment. Our sectoral analysis has pointed to a buildup of excess capacity in Canada relative to demand in the oil and gas, petrochemical, and utilities industries. The building of large investment projects in the utilities sector contributed to an investment boom in the 1960s and 1970s, but the resulting overcapacity, or satiation, of capital might well lead to a weaker investment performance in the future.[5]

Population Movements — Between 1971 and 1984 Canada's population increased at an annual rate of 1.3 per cent, compared with 3.0 per cent between 1946 and 1971. Between 1947 and 1960 the birth rate hovered around 27 to 28 per thousand, but it declined continuously thereafter until the mid-1970s, when it stabilized at 15.5 births per thousand. Thus it is obvious that by the mid-1960s, the baby boom had come to an end. This is also shown by the analysis of Canada's age pyramid: from the Second World War until 1966, the "newborn to four years old" category represented the most important age group in the population; in 1966 the "five to nine years old" group took over in relative importance in the age pyramid.

All sectors have benefited from the increased demand attributable to the baby boom, particularly as the young reached maturity and started forming households of their own. Economists have always considered population growth as a major contributor to economic growth. A larger population results in a greater demand for consumer products and provides the workers needed to increase production. At the same time, there is an increased demand for plants and for machinery and equipment in order to provide the tools necessary to meet the rising demand for consumer goods. Thus population growth is an important determinant of investment on both the demand side and the supply side. In the early 1970s, as population growth in Canada entered into a contraction phase, long-term investment in infrastructure also began to slow down. This trend is continuing. In the nearer term, many sectors will continue to bear the impact of decreased demand, and this will be translated into lower investment. We have already noted the build-up of overcapacity in the electrical industry, as the demand for household appliances slowed down. For example, the demand for motor vehicles would also have been weaker had there not been a shift towards vehicles that are more fuel-efficient.

Technological Revolution — Technology is the other major factor contributing to long-term economic growth in most growth models. With new and improved technology, the economy can turn out more and better products at a lower cost. Economic and social development in the world has been greatly influenced by a number of technological revolutions. Earlier in this century, a wave of technological change based on the internal combustion engine and on electricity brought forth motor vehicles and airplanes, the telephone, the radio, and so on, and gave rise to important chemical industries and the modern pulp and paper industry. Today, the new revolution is characterized by new sources of energy, space and ocean technology, robotics, biotechnology, microelectronics, and so on. While computers have made some inroads into practically all Canadian industries, some have remained relatively unaffected – the clothing and food-processing industries, for example. It has been argued that the longer-term weakening of investment that started in the 1970s has been caused in part by the hiatus between the earlier technological revolution based on the internal combustion engine and electricity, and the current one, led by the computer.[6]

Exploitation of Natural Resources — The exploitation of new resources is another factor that influences investment in the longer run. The oil fields of Alberta are a case in point. In the early 1970s the OPEC-inspired price shock, combined with new exploration projects linked to the development of the tarsands industry, contributed to an investment boom in the oil and gas sector, with spillover effects on other sectors. Later in the decade, the retrenchment of the oil sector was in part responsible for the weaker investment performance of the Canadian economy. Investment in other primary industries – such as iron and steel, copper, nickel, lead, and zinc – clearly follows the long-term trends in world prices for these products. For example, the price of lumber rose continually from the mid-1960s until 1979; it more than tripled between 1970 and 1979. In the wake of this increase, exports of lumber almost doubled between 1968 and 1979. Given the importance of the primary sector for the Canadian economy, investment in this sector is an important determinant of total investment directly; it also has an indirect impact through spillover effects on other industries, such as petrochemicals, machinery, and so on. Finally, the income created by increased activity in the primary sector will be spent, boosting demand for final consumption products, and this in turn will contribute to increased investment.

Consumer Attitudes — Another factor contributing to long-term investment trends is consumer attitudes, particularly as they are reflected in the propensity of consumers to spend. From the end of the Second World War to the early 1970s, consumer spending attitudes were highly favourable to long-term economic growth. Personal disposable income was rising rapidly – at a compound annual rate of 6.4 per cent between 1967 and 1973 – and saving rates were low; during the same period, real personal expenditure rose by 5.7 per cent annually.

These trends began to change in the early 1970s. The growth rate of real personal income slowed down steadily in the first half of the decade, while personal savings, buoyed by inflation, reached record highs; between 1980 and 1983, they stood at about 12 per cent. A high saving rate meant lower consumption and lower demand for investment. The high level of savings, although it has descended from the heights reached in the early 1980s, is expected to continue for a number of years. The aging of the population will not favour high consumption levels.[7]

Inflation — From the mid-1960s to the late 1970s, inflation crept up almost steadily, providing companies with windfall profits. Although these book profits were somewhat artificial over the long run, they gave entrepreneurs more confidence and an extra incentive to expand operations. Firms also expected to be able to pass on to consumers the increased costs of production and capital. Furthermore, in an inflationary environment there is a transfer of resources from lenders to debtors. Thus there was a strong incentive to expand assets with borrowed funds. Even when businesses were acquiring a level of debt that was too high relative to their assets, they were confident that their financial health would, in the long run, be restored through the "inflationary increase" of the market value of their assets.

The most severe recession since the Second World War also marked the beginning of a disinflationary process. This abruptly ended the rosy expectations of the business community. No longer could firms be bailed out by inflation. Many who had overborrowed scrambled desperately to restore their balance sheets. Investment plans based on overly optimistic future price movements were reassessed or even shelved. The disinflationary process brought to an abrupt halt the autonomous part of investment in anticipation of future demand and future price increases.

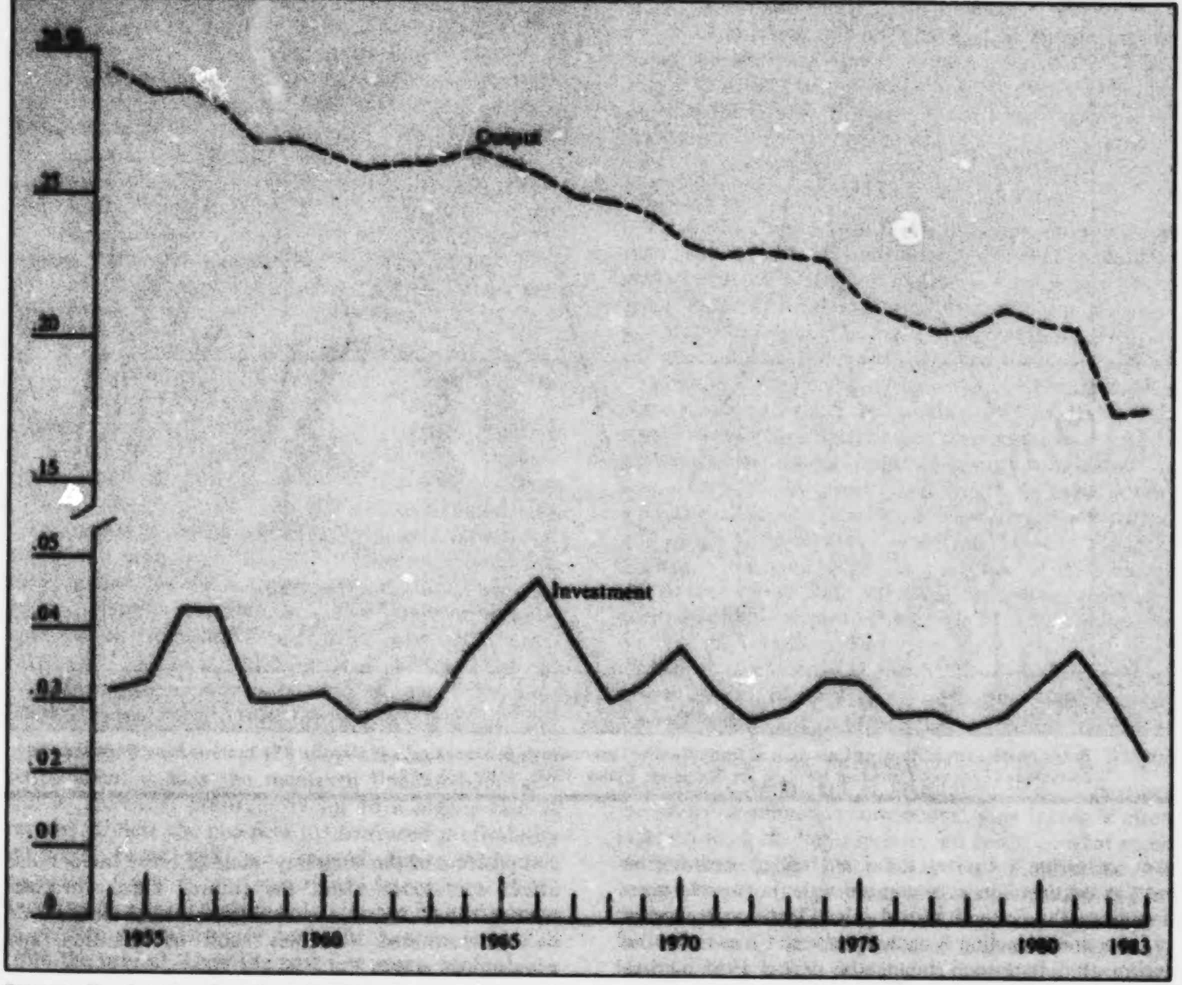
Other Structural Changes — The manufacturing sector has suffered a relative decline in importance in the Canadian economy: its share of GDP declined from 29.2 per cent in 1954 to 17.6 per cent in 1983 (Chart 6-7). This reflects a structural change in the Canadian economy, embodying a movement away from the secondary sector towards services and information-based activities, with important consequences for investment.[8] These trends are likely to continue in the coming years.

The Business Cycle

Investment, inasmuch as it is unstable, is often viewed as a proximate cause of the business cycle; but it also reacts to the general movement in economic activity. Rising exports or an "autonomous" increase in capital expenditures in Canada will, in turn, give rise to increases in income, consumption, and induced investment. As income rises, a larger proportion of the increment is saved, and the impact on the induced demand for investment slowly peters out. At the same time, the increased demand for investment gives rise to greater competition for the limited resources available and thus pushes up the cost of labour and materials; as

Chart 6-7

Manufacturing Investment and Output as Proportions of GNP, Canada, 1954-83



SOURCE Based on data from Statistics Canada.

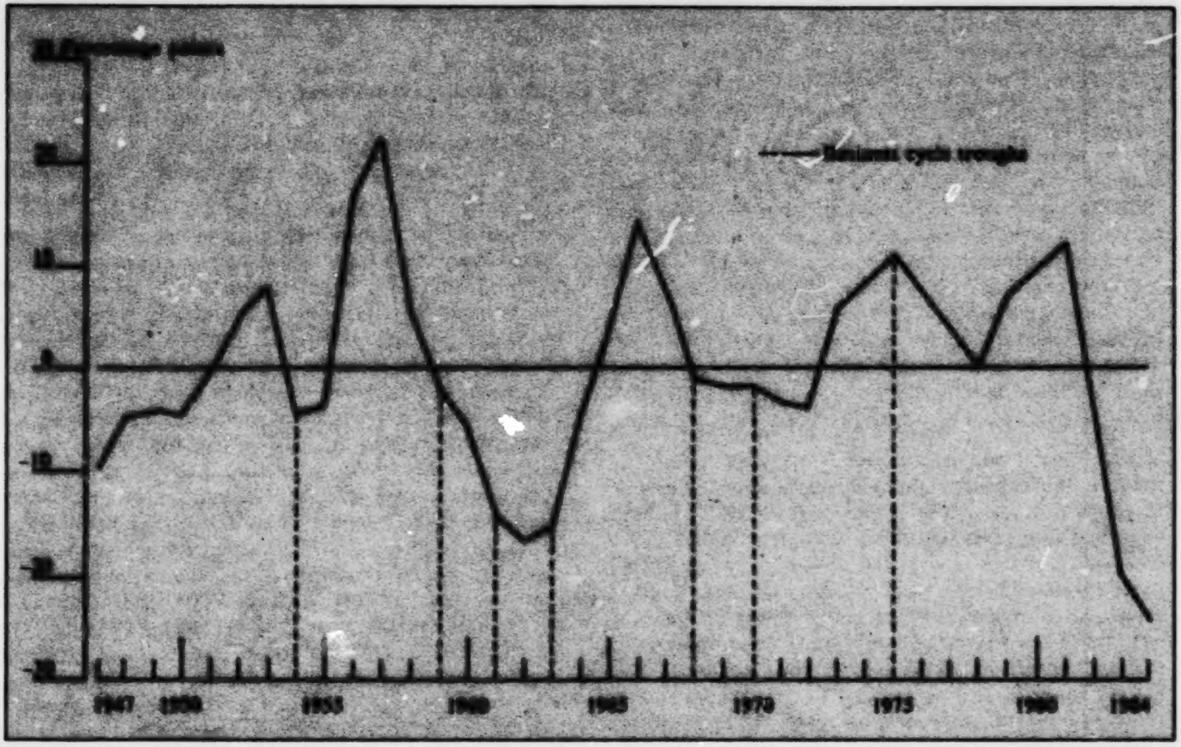
a result, the costs of investment projects also rise. With the greater demand for financial resources, interest rates also increase, thus raising the cost of financing capital outlays. The combination of declining induced demand and rising costs as the business cycle matures will bring the increase in investments to a halt. Capital outlays could even embark on a downward trend, which would, in turn, produce a declining trend in income and thus further reduce the induced demand for investment.

Thus the business cycle is the result of the interaction between consumption and investment, and between induced and autonomous investment, the latter being linked to confidence in the future. Of course, confidence is rather low during a downward cycle, but it may turn around before the cycle bottoms out and thus give rise to the next round of investment increase.

The poor investment performance since 1981 is attributable to the joint influences of long-term factors and the downward phase of the business cycle. The slowdown in population growth, the retrenchment in resource development, a marked and prolonged increase in the saving rate, the slow introduction of

Chart 6-8

Deviation of Investment from its Trend, and Business Cycle Troughs, Canada, 1947-84



SOURCE Based on data from Statistics Canada, and from Maurice Lamontagne, *Business Cycles in Canada: The Postwar Experience and Policy Directions* (Toronto: Canadian Institute for Economic Policy, 1984), Table 1-2, p. 6.

new technology, capital satiation, and a disinflation process occurred in conjunction with the worst recession since the Second World War. The occurrence of an investment decline is nothing new to Canada, as the decline that happened during the period 1955-62 was also the result of the combined negative impact of long-term factors and the business cycle (Chart 6-8).

Factors Affecting Investment Decisions

The factors analysed above affect business nonresidential investment by influencing the variables that have a direct bearing on investment decisions. Such factors as Canada's share in world markets, population growth, technology, resource development, consumer attitudes, and the business cycle affect the final demand for a firm's product; new technology, the stock of existing capital, and the level of final demand have an effect on current and expected profitability; the business cycle and inflation influence the level of interest rates (real rates, in particular) and the financial position of the company; most of these factors also affect confidence about the future. These variables have a direct impact on investment decisions, as do policy-determined variables such as taxation and government grants.

Final Demand — The most important factor in a company's decision to invest is the actual or anticipated final demand for its products. If final demand is weak because of a general slowdown in the economy, a shift in consumer demand, or the loss of a foreign market, investment performance will also be weak. Conversely, a strengthening of final demand could ultimately give rise to increased investment. The increase in final demand for a product may come not only from the strengthening of economic activity or a shift in consumer demand but also from a gain in market share.

While a strong final demand is a necessary condition for increased investment, it is by no means a sufficient condition. For investment to occur, another requirement is that the firm be unable to meet additional demand with its existing productive capacity. If the firm has excess capacity, it can respond to increased demand for its product without having to expand its productive capacity. In the manufacturing sector, the rate of capacity utilization declined sharply after 1979, reaching a low of 69 per cent by the end of 1982. This was also a period of weakening investment performance. Capacity utilization has risen since, reaching 84 per cent by the third quarter of 1984. The durable and nondurable goods subsectors experienced a somewhat different evolution. In the latter, capacity utilization dipped only to 77 per cent, while in the durable goods industries it sank to a low of 61.9 per cent in the fourth quarter of 1982. The mining sector also saw its capacity utilization drop below 70 per cent for a while.

A low capacity utilization does not necessarily mean that no investment will occur. Investment may still take place, not to expand productive capacity but to introduce new technologies or new products that will enable the firm or industry to gain a greater share of the market and therefore contribute to increased final demand. That happened in the automotive industry, for example, where production lines were changed to meet the requirements for lighter, fuel-efficient vehicles and for the modernization of the production process in order to enable the industry to meet head-on competition from Japanese and European car manufacturers. This is a prime example of autonomous investment, which occurs in anticipation of increased demand rather than in response to it.

Profitability — For the firm to invest, another requirement is that the increased final demand give rise to increased profitability (or to a higher rate of return). Unless the prospect for increased profitability is good, firms will not expand their productive capacity. Cost is an important determinant here. Investment will take place only if it can be undertaken at a cost commensurate with the revenue expected from the project. Over the past few years, profitability has been rather low in many sectors of economic activity, as have the prospects for future increases in profitability. Pretax profits declined by 13.4 per cent in 1981 and 35.3 per cent in 1982. This poor record held new investment plans in check.

Interest Rates — Profitability may also provide a firm with the internal funds needed to proceed with its investment plans. The availability and cost of funds, as well as the price tag of the investment project itself, are major constraints in the decision to invest. The level of interest rates – in particular inflation-adjusted interest rates – may play a major role in this respect. Firms will proceed with their investment plans if the expected real rate of return on the newly acquired capital is greater than, or at least equal to, the real rate of interest in the economy. Over the past few years, Canada has experienced extraordinarily high real rates, by historical standards, and this has dampened investment activity. Since 1983 Canada and the United States have had the highest before-tax real rates since 1954. After-tax real rates have also been high in both countries. But they appear to be higher in the United States than in Canada, reflecting a lower tax burden south of the border. It was, as we saw in Chapter 5, the constraint imposed on monetary policy and interest rates by developments in the U.S. and world money markets that contributed to these high rates.

Financial Position of Firms — High interest rates have not only held back investment but have also contributed to putting a number of enterprises in a precarious financial position. And this could be an added constraint on the decision to invest. Many firms entered the 1982 recession with historically high debt-to-asset ratios.[9] This was the result of business decisions made under the assumption that inflation rates would remain high and that, as a consequence, product prices and the market values of assets would rise. As the disinflationary process set in, those expectations were not realized, and many firms were brutally forced to change their strategy. Particularly hard-hit were medium-sized companies, as the number of corporations with very high debt-to-asset ratios increased dramatically. Low profits and a high level of borrowing during the recession were the main cause, so that during the recovery phase many firms devoted a large proportion of their financial resources to paying off their debt rather than to purchasing new capital goods.

Confidence — Confidence in the future is a very important determinant of investment and, in particular, of its autonomous component. This factor is often referred to as the "entrepreneurial spirit" – what some authors have called "animal spirits." Confidence will bring the extra impetus needed to undertake capital outlays. Confidence may arise from any number of factors; it may be the result of a buoyant economy, leading to a high expected demand for the final product; it may come from rising profitability, declining interest rates, and an improvement in balance sheets. Confidence may also come from technological developments that are expected to lower costs significantly and to contribute to the introduction of successful new products; or it may derive from government policies that create a favourable business climate.

Taxation and Subsidies — Taxation may also play a role in encouraging or hindering investment in one sector relative to another or in one country relative to another. For example, the exceptional investment performance of the manufacturing sector in the United States since 1981 could, to some extent, be attributed to the Economic Recovery Tax Act (ERTA), passed that year. This legislation allowed significant acceleration of depreciation deductions. In Canada many tax measures were introduced during the 1970s to stimulate investment decisions. These measures included changes in the capital cost allowance (deduction for depreciation), various investment incentives, and changes in the corporate income tax rate.

The capital cost allowance is a deduction for the imputed cost of wearing out an asset through use. Normally, an asset is written off at the rate at which it actually wears out. There are exceptions, however. From 1970 to 1972 machinery and equipment used by manufacturing and processing industries were written off at the regular rate but using a depreciation base of 115 per cent of the original cost.[10] Beginning in 1972, such expenditures could be written off at a rate of 50 per cent. Mining industries have received accelerated depreciation for investment in buildings and machinery used for new or expanded mines. They have also received a depletion allowance for their mines, and they may write off all of their exploration costs at the outset. Moreover, all industries making investments in energy conservation equipment and in air and water pollution control equipment, as well as in motion pictures, are eligible for accelerated depreciation on those expenditures. In certain designated depressed areas where investment outlays have been sluggish, investment has also benefited from accelerated depreciation.

The investment tax credit was introduced in 1975 to stimulate investment further: 5 per cent of the cost of new investment in buildings and machinery could be deducted from taxes payable. In 1977 the investment tax credit was extended to allow for higher rates in slow-growth areas and for expenditures in scientific research and development. In 1978 the rates were raised, and some previously excluded equipment was made eligible.

Finally, the decision to invest depends upon the statutory tax rate to which the firm is subject. In 1972 a small-business tax rate of 23.25 per cent (one-half of the basic federal corporate tax rate) was implemented to encourage the creation of small business firms. Beginning in 1973, manufacturing and processing industries were taxed at a lower rate (40 per cent, compared with the general rate of 49 per cent) to encourage the growth of this sector. Small manufacturing firms were also taxed at a lower rate (20 per cent) than that applying to small businesses in other sectors (25 per cent).

The corporate tax incentives outlined above have been responsible for a marked change in the composition of government revenues in recent years. Whereas corporate taxes accounted for 23 per cent of the total in 1951, by 1982 that share was only 6.3 per cent. The effect of these incentives on investment has been less marked. The consensus among analysts is that the revenue loss to government has been greater than the value of the additional investment generated by these incentives.

Finally, government grants and special programs may also have some impact, although various studies have shown that this effect is rather limited. The business community admits that in many instances government assistance is just "gravy" and not an incentive directly responsible for increased investment.

Relative Importance of Different Variables — Economists have proposed many models of investment determination, with more or less success. There are four different types of approaches to investment modeling. The "accelerator model," based on the anticipation of the future demand for the final product, is the most commonly used by economists; the "cash flow" model is based on the hypothesis that the firm maximizes its net worth; the neoclassical model takes into account the cost of capital; and finally there is a model that assumes that the firm wishes to maximize its market value. Current econometric forecasting models often combine the various assumptions on which these four approaches rest. The CANDIDE model, for example, attributes a major role to the demand for the final product, but it also takes into account factors such as the cost of the investment project and the cost of funds.

Both in econometric models and in real life, the demand for the final product turns out to be among the most important factors in investment decisions. In the surveys about investment intentions conducted by the Department of Regional Industrial Expansion, expected sales were often the most important factor affecting current and expected investment spending. For the respondents who had modified their plans, the most important reason for doing so was a change in domestic market demand. Expected cash flow was also viewed as an important factor by a large number of survey participants. Only 16 per cent pointed to the cost of funds as a factor influencing investment decisions, and only 6 per cent considered the availability of funds to be a factor.

A sector-by-sector analysis yields similar conclusions. In the plastics industry, high interest rates do not appear to play a significant role in investment decisions, as higher financing costs are, at least in part, passed on to consumers. Interest rates may have an indirect impact, however, if they affect final demand through the higher cost of consumer finance. In the machinery sector, final demand is, again, the main factor affecting investment decisions. Interest rates and the cost of capital appear to have a greater influence in the petrochemical industry, especially insofar as they affect the balance sheets of firms. In the electrical sector, higher interest rates, especially in the

1980s, are only of temporary significance. Investment decisions are made on the basis of long-term projections that go well beyond the interest-rate cycle.

Simulations with CANDIDE Model 3.0 confirm these results (Table 6-4). Investment responds first and foremost to changes in final demand. Over the longer run, an increase of 1 percentage point in output or final demand will result in investment rising by 1.3 per cent.[11] Interest-elasticity is quite low. A 10 per cent increase (decrease) in the industrial bond rate causes only a 1.4 per cent decrease (increase) in investment in the long run. That is primarily because about 40 per cent of investment is financed by debt and 60 per cent by equity. The response of investment to changes in the effective tax rate or in the investment tax credit rate is equally low. For the business sector, a 10 per cent reduction in the effective tax rate (from about 35 per cent of income, on average, to 31.5 per cent) produces an increase in investment of 1.2 per cent. A 10 per cent increase in the investment tax credit rate (from 10 to 11 per cent) results in a 0.8 per cent increase in investment. It appears, however, that an increase in the investment tax credit is more effective than a reduction in the effective tax rate in boosting investment at a minimum cost to the public purse.

An Illustration: The Megaprojects — An analysis of the energy megaprojects, particularly those which were cancelled, illustrates the role played by the various factors contributing to investment decisions. In the late 1960s and the 1970s a number of megaprojects were announced and in some cases developed, particularly in the oil and gas industry – Syncrude, Alsands, Cold Lake, and Suncor. The main determinant of the decision to start those projects was the expected demand for oil – and especially the expected price of oil. The megaprojects were considered viable following the 1973 OPEC shocks, which had generated expectations of further oil price increases. In the second half of the 1970s, these price expectations ran as high as $50 or even $75 a barrel. Construction costs were also a factor, particularly as it would take some time before oil could flow from these projects. While interest rates, especially real rates, were quite low at the time, a megaproject could not be undertaken without government assistance. Given the long lag between construction and the selling of the final product, the major oil companies involved wanted government as a partner, to share the inordinately high risks. For the Alsands project, for example, it was estimated that 90 per cent of the total cost – $13 billion – would be spent for mining equipment and site preparation before a single barrel of oil would be produced, and a seven-year lag was contemplated before the start of production. Large, Alsands-type projects could therefore only be attractive to industry if substantial government support were forthcoming.

The Alsands and Cold Lake megaprojects were put on the back burner[12] not only because there was insufficient government support, in the view of industry, or because the NEP would cause a larger share of future profits to be squeezed out of the pockets of the oil companies, but also because there was a major change in the outlook for oil consumption and oil pricing. In particular, the world price of oil declined sharply in the early 1980s, and some observers now forecast that it will drop to $20 a barrel before it begins to rise again. Thus the market conditions for the final product – that is, the price of the product and the quantity of the product that can be sold – are the major determinant of the decision to invest in a megaproject, as with any investment project. Cost factors also played an important role in the decisions to cancel those megaprojects. The burst of activity, particularly in mining and construction in Alberta,

Table 6-4

Elasticities of Investment in Response to Various Shocks, Selected Sectors, Canada

	Total business	Manufacturing	Mining
Output stock: 1 per cent increase in growth rate	1.30	1.18	0.96
Interest rate: increase of 100 basis points in bond rate	-0.14	-0.17	-0.07
Effective tax rate: 10 per cent reduction	0.12	0.17	0.25
Investment tax credit rate: 10 per cent increase	0.08	0.12	0.09

SOURCE Estimates by the Economic Council of Canada.

pushed up the costs of labour and material. In addition, interest rates shot up, as the nominal rate reached above the 20 per cent level and the real rate hovered around the 7 to 8 per cent mark. Under the circumstances, it is not surprising that most of the megaprojects were shelved.

A Look into the Future

Forecasters and business people agree that, in the coming years, investment will be a rather cautious and slow process. Longer-term factors will not be as favourable as in the 1960s or early 1970s. Population growth will continue to slow down; oil prices will remain low; the introduction of new technology will be slow; and the saving rate, although declining, will remain high. In the shorter run, however, the upward phase of the business cycle will bring an increase in investment in 1985 and 1986 relative to 1984.

First, the revival of economic activity that started in 1982 brought with it renewed demand for investment. In addition, our work suggests that capacity utilization in both mining and manufacturing will increase between now and 1988. That increase is not expected to bring capacity utilization up to the levels reached during the mid-1960s, however. Second, there is continuing improvement in the debt-to-equity ratio of most corporations, and the recent decline in short-term interest rates should help to reduce financing costs. Third, the economic recovery has proved adequate to improve the profitability of the corporate sector. Finally, the measures announced in the May 1985 Budget are expected to help companies to improve their access to the equity market. In addition, the tax exemption of capital gains should lower the effective tax rate of the combined personal and corporate sectors. This should have a positive impact on the future rate of return on investment and, therefore, on capital outlays. This positive impact may be delayed, however, by the gradual introduction of the exemption; it may also not receive the full anticipated benefit because capital gains on paper transactions are just as eligible for the exemption from income tax as are gains resulting from real investment.

The increase in investment will take place in an environment of continuing high interest rates by historical standards, despite their recent decline. Nominal rates will hover around the 10.5 per cent mark until 1995, producing high real rates, as inflation will remain around 3.5 per cent. These nominal rates will be almost three times as high as those which prevailed after the 1958-62 recession. Such a high cost of funds may be absorbed by firms if they are able to continue selling their products at higher prices. And investment will depend, at least in the short run, on the impact of the demand for the firm's product on its capacity utilization.

The oil and gas sector is expected to benefit from a continued good investment performance. The new fiscal regime embodied in the May 1985 Budget and in the Western Accord will definitively prove beneficial to the industry; already, companies have seen their cash-flow position improve. There is a large resource base that is quite viable, even with a world price of $20 a barrel. The anticipated capital outlays will be almost as significant as those of the cancelled megaprojects at Cold Lake and Alsands, but they will take the form of a succession of smaller projects, such as those at Cold Lake and Wolf Lake, where investment can be terminated, at least temporarily, should the business environment deteriorate. In manufacturing, the leading industries appear to be motor vehicles and parts; transportation equipment; pulp and paper for newsprint, where capacity has now reached the 98 per cent level; office equipment; and computers. In addition, manufacturing investment is likely to be geared towards the introduction of new technology rather than the extension of capacity. The introduction of new technology involves not only extra spending and the transformation of the production process, but also a complete change in attitudes and in the approach to management and organization. It takes time to adopt new technology and new ways of approaching the manufacturing system, as well as inventory control, sales, or marketing. As the process matures, it is expected to accelerate in the future.

With respect to residential investment, there are some positive influences at work, although the slowing population growth could dampen the long-term outlook. Despite a continued reduction in additional housing requirements over the next decade and a half (according to an analysis conducted at the Canada Mortgage and Housing Corporation),[13] the release of pent-up demand over the next few years should give rise to stronger activity in that area. But this increase in demand will not affect all kinds of construction: it will favour expensive, single detached homes as the baby boomers age and the size of the 35-to-45 age group swells during the coming decade; the demand for apartments and rental housing will, as a result, continue to be depressed. Pressures for fiscal restraint at the federal and provincial levels of government will influence the future level of support for new social housing – which lately has represented one-fourth of all housing starts (excluding single detached homes) – especially in view of the very large ongoing commitments to existing programs.

Although public investment has slowed over the past decade, it is difficult to forecast the precise moment when it will pick up again, as data on the age of public capital stock are not available. With changing population trends and social needs, governments are now faced with an oversupply of certain types of social capital – school buildings, for example. On the other hand, there is a dearth of hospital facilities and care centres for the elderly. One could therefore expect some increased capital outlays aimed at adapting the existing public capital stock to current needs, at the very least. As the fiscal constraints on government ease, there may be a return to the construction of public facilities, particularly in the health care area. Sooner or later, there should be some major program to rebuild the road and sewer infrastructures.

If there is little that governments can do directly to increase investment because of the serious fiscal constraints to which they must submit, they can work as a catalyst in several areas. First, governments could try to provide extra impetus in the sectors where the prospects for investment are good – oil and gas, motor vehicles and parts, the high-tech industry, other selected manufacturing sectors, and so on. Second, governments could encourage capital outlays to introduce new technology, as this would contribute to increasing the real rate of return on Canadian business operations and to offsetting the high real interest rates imported from world markets. Finally, governments could also contribute to an environment favourable to increased investment spending by taking measures that would enhance confidence in Canada's economic potential. While it is true that government must put its house in order, deficit cutting and fiscal balance should be sought carefully, so as not to have a negative impact on the attitudes of consumers and on their ability to spend. As we have seen, final demand is a major contributor to investment expenditures, and consumer attitudes are an important factor in the process. The federal budget of May 1985 could awaken the "animal spirits" in Canadians and lead to improved investment performance over the next 10 years. On the other hand, the partial repeal of the capital gains tax could result in investment in nonproductive financial assets, and the higher sales and income taxes – which are not counterbalanced by job creation programs – could depress consumer spending. If that were to occur, investment performance might be weaker than projected.

7 Options and Constraints

Canada's medium-term economic prospects have shown improvement since the trough of the 1981-82 recession. The projections set out in Chapter 2 contain many favourable national economic trends, including those for real GNP and the consumer price index. The medium-term growth rates for these indicators are expected to average between 3 and 4 per cent annually over the next five years, with little risk of either accelerating inflation or a sharp, deep recession, as occurred in 1981-82. And this improvement follows many difficult adjustments that have been completed or are near completion, particularly with respect to attitudes and perceptions both in Canada and in the world at large. The partial restoration of confidence among Canadian producers, investors, and households also continues to make an important contribution to these improved economic prospects.

For the near term, many unsolved problems remain. A high national rate of unemployment and substantial unevenness in regional economic performance, especially in regions where a specific sector dominates – lumber, agriculture, or petroleum, for example – are the most visible. For the federal deficit and debt levels, recent budget changes in taxation and spending have nudged, in a much more favourable direction, what was once an ominous trend in the ratio of the stock of federal debt to GNP. Although improvement here is still possible, it depends partly – as does further improvement in the unemployment rate, both nationally and regionally – on the general economic trends that are emerging as the current cycle of recovery and expansion matures, especially in the United States. This is apparent in the alternative projections reviewed in Chapter 2. Depending on the outcome in key areas, substantial medium-term differences are possible in the growth rates and levels of such indicators as real GNP, prices, the unemployment rate, the federal deficit, the performance of productivity, and the trade balance. Our analysis indicates that the outcome here depends, among other things, on progress in areas such as the strength of domestic investment, the mix of fiscal and monetary policy in Canada and the United States, and the control of inflationary expectations. Thus the prospects for jobs and for growth in real income are not without some constraints.

During the balance of the 1980s and the early 1990s, strengthening the bases for growth and job creation, both regionally and nationally, should be Canada's first priority. The time is ripe for this emphasis. We are not suggesting a hard, fast push of expansionary policies, as we are well aware of the difficulties that could result from such action. What does impress us are the many favourable trends that are emerging and moving in directions that we think are reasonable. The constraints to growth also appear much weaker than they were just a few years ago when recession, high interest rates, and the turmoil of world oil markets were the focus of attention. Thus we believe that a number of steps could be taken during the next few years to strengthen the bases for growth and to improve both economic and social performance in Canada. We emphasize that currently preparation is on an equal footing with action. As the economy strengthens, Canadians should prepare to both reinforce the favourable trends and correct those less favourable. As circumstances permit, they might consider reducing the deficit at a faster pace, notching inflation down to half its current rate, changing the mix of monetary and fiscal policy, reforming the welfare system or the tax system, and – perhaps most important – tackling the problem of unemployment in a way that would ensure a reduction in the average jobless rate over the medium run. There are of course, many other items that could be added to this list. If some of the solutions proposed are successful, other policy areas that currently need attention will be less difficult to approach. Many of these areas bear on the targets set by the Economic Council in past Reviews.

Council Targets and the Current Policy Framework

The last two Annual Reviews of the Economic Council have set out a performance framework – in short, a number of targets. We still believe that these targets are worthwhile pursuing, because they are both consistent and attainable. They are put forth as a package rather than piecemeal. If not attainable in the short run – because events can always overtake a plan of action – the targets can serve as a guide to the direction Canada ought to take when facing choices or reviewing past performance.

In our Twenty-First Annual Review, we restated our targets – namely, to:

- achieve a trend rate of employment growth of between 2 and 3 per cent annually so as to reduce unemployment to between 6 and 8 per cent of the labour force by 1990 – that is, to relatively full employment, consistent with nonaccelerating inflation;

- restore for Canada a trend rate of increase in productivity, as measured by real output per employed person, of between 1.5 and 2 per cent annually;
- keep the trend rate of annual inflation down to 5 per cent or less, recognizing of course that there will be variations in inflation rates because of international and domestic factors;
- encourage a rate of domestic saving high enough to contain Canada's average dependency on net capital inflows to about 2 per cent of GNE or less; and
- maintain the objectives and the substance of the existing social policies insofar as they provide affordable benefits to Canadians but improve the efficiency of their delivery systems and, where possible, fill the most urgent gaps in their application.

And we added one more target – namely, to:

- reduce the size of the federal deficit gradually to an easily manageable level, bearing in mind the cyclicality of the economy, and thereby re-establish a sound fiscal relationship in the federal budget.[1]

Canada's national economic goals and the ability to reach them in the past have often been constrained, but the optimistic alternative described in Chapter 2 suggests that our targets are now more within reach than they were previously. Real growth in that scenario would be about 3.5 per cent per year, on average, with growth in the consumer price index averaging 4 per cent annually. Growth in labour productivity would reach about 2 per cent a year, and average employment rate growth would fall to just under 1.8 per cent a year. By the mid-1990s the unemployment rate could decline to below 7 per cent; the federal deficit as a share of GNP could drop to below 2 per cent; and Canada's dependency on net capital inflows could remain well within 2 per cent of GNP.

Many things must go right for this outcome to occur. In particular, the external environment must be free from price and financial shocks; the U.S. government must manage its deficit and external trade problems in a way that does not result in a tightening of monetary policy by the authorities of the Federal Reserve System; some headway must be made in restoring domestic investment performance to more normal levels; and vigilance must be maintained to prevent inflationary expectations from exploding in the late 1980s and early 1990s as they did in the mid-1970s and early 1980s. Containing inflationary expectations and meeting the goal for employment growth are perhaps the targets that will be the most difficult to achieve, but the alternative could be a repetition of the poor performance of the 1970s and early 1980s. It goes without saying that the inflationary performance and the surge in the unemployment rate experienced during that period should be avoided as part of any medium-term growth strategy. No doubt there will be some inflationary pressures; and these pressures could be worse if the United States, Europe, and Japan move in step, all reaching for their domestic goals during the same time frame.

In the debate on economic policy during the last few years, many ambitious targets have been suggested by others. At one time or another, a zero rate of inflation, much faster deficit reduction, more rapid job creation, and a substantial increase in Canada's share of world trade have been put up for discussion. These lofty goals are often set out in isolation, rather than as part of a consistent package. A target of zero for the rate of inflation is attractive, but it could pose some difficulties. It could involve a regime in which a large proportion of Canadians would have to endure a reduction in money wages, and perhaps even in real wages, from one year to the next. To attain a zero inflation rate in the near future might well require more than a moderately anti-inflationary policy. A deliberate deflationary monetary and fiscal policy might have to be maintained for several years, and this might result in pushing unemployment rates up from their current high levels. In an economy as open as Canada's, exchange rate pressures could short-circuit any long-run gains. Short-term gains towards decelerating inflation could result, but would they be worth the cost? Keeping inflation from rising above the current range or even lowering it somewhat is highly desirable, but a zero inflation target for the next few years appears to be overly ambitious, all things considered.

Another key area where some progress appears to be under way is deficit control. The federal deficit was the central issue in both the November 1984 Economic Statement of the Finance Minister and the May 1985 federal Budget. As a result of actions outlined in both documents, the federal deficit (on a National Accounts basis) now appears to be headed towards 4 per cent of GNP by 1990, down from the recent high of about 7 per cent. Under these circumstances, the ratio of federal debt to GNP would stabilize by the early 1990s, as would the proportion of GNP devoted to debt-servicing costs. These changes will not happen overnight – nor should they, as the costs could be substantial. And, based on past experience, deficit control is an area where success has not been the rule but rather the exception. Moreover, governments are frequently faced with unforeseen emergencies that call for expenditures regardless of the intended setting of the fiscal stance. Nevertheless, the Council continues to give high priority to a firm, gradual program of deficit reduction because of the serious problems that would arise from excessive public debt in the future.

Some have argued for a much larger and faster deficit-reduction and debt-control package, especially on the expenditure side, than was contained in the May 1985 Budget. In contrast to this, the Economic Council has stated in the past that, although there is room for further efficiency in government spending, a significant problem on the revenue side has also contributed to Canada's expanding deficit. Last year, we said that regardless of the measures taken to curb expenditure growth – and we were even less sanguine about cuts in social programs and foreign aid – additional revenue would be required if government was to be seen as vigorously reducing the deficit relative to GNP throughout the remainder of the decade.

Whether a quicker deficit reduction than was put forth in the May 1985 Budget could be accomplished without causing a slowdown in real growth and a rise in unemployment rates in the immediate future depends on one's view of the strength of the recovery, both in Canada and in the world at large, and on the level of confidence that lower deficits would generate in the financial sector and with respect to the development of new investment projects in this country. As the analysis by both the Department of Finance and this Council has indicated, results can be influenced one way or another by the indigenous strength of the current expansion or by international events, especially in the United States. If actual events turn out to be more in line with the optimistic alternative of Chapter 2, then perhaps a new look at the pace at which the federal deficit should be reduced would be in order. However, if the debt control measures follow the plan set out in the May 1985 Budget during the remainder of this decade, they will have a significant impact on both expenditures and revenues. The Canadian government's undertaking in this area is, in fact, likely to be much more effective than the "down payment" of deficit reduction proposed in the United States. In any event, we emphasize that the reduction of the federal deficit ought to be accomplished using a prudent mix of tax measures and spending restraint that would spread the burden across a wide range of groups and sectors.

Moreover, the deficit reduction strategy ought to be sensitive to the objectives and general thrust of existing social policy. Given the depth and breadth of structural change that Canada will face during the next ten years in technology, in the workplace, in demographic composition, and in trade, it will be important to have a good base of social policies to build upon and to maintain flexibility as the changes occur. For example, we believe that considerable improvement in both the equity and efficiency of Canada's system of social policies can be achieved without substantially increasing the relative burden of the real costs of such programs for Canadians.

During the last decade or so, a number of studies have shown that, in combination, the welfare system, the social programs, and the taxation system in Canada lack both equity and administrative simplicity, and produce substantial disincentives to work. Administrative complications arise from the multitude and complexity of the programs themselves. Disincentives to work are present because persons previously on welfare who engage in part-time or full-time work typically lose 75 per cent or more of their new earnings from employment through the direct loss of welfare benefits and through the imposition of payroll and other taxes. When job expenses and the increased cost of child care are added, the results are even worse. The concrete circumstances vary from one province to another, but the general story is similar in all parts of Canada.

These problems have existed for many years, and they have been reduced to only a limited degree in the last decade. The 1973 Orange Paper on welfare reform outlined the situation quite clearly,[2] but its proposals for reform were not acted upon to any significant degree. The Economic Council's work on Canada's social programs and on the Newfoundland economy presented a similar point of view.[3] The Council proposed a restructuring of the welfare system, with related tax changes, in order to reduce the disincentive effects that actual marginal rates of taxation produced.[4] However, the Council is quite aware, as was the Orange Paper, of the fact that, to be effective, incentives require that jobs be available.

Why has reform not taken place already? It has been difficult to put together the data needed for a systematic, comprehensive, and properly integrated study of the welfare system, the social programs, and the tax system. A provincial government is in a much better position to do this, because it administers directly most of the components of those systems. Also, there has been a reluctance to use social insurance numbers or other keys to integrate datasets, because of concern over the invasion of privacy. Generally speaking, people are reluctant to give up the benefits they are currently receiving, even if it can be argued forcefully that others are in greater need. If this reluctance is honoured, reform will involve an increase in government outlays, as more benefits are provided to those in greater need without reducing payments to current recipients. Reform will also cost more if governments tax only part of the new earnings of individuals who go fully or partially off the welfare rolls. Governments have felt unable to make such commitments, particularly since they face such large deficits.

It is becoming increasingly clear that what is required is a more comprehensive and integrated consideration of these issues, rather than a piecemeal approach, and that both the federal government and the provinces have a vital interest in reforming the present system. Moreover, it is essential to consider the related issues of tax and transfers in a way that is integrated with the welfare system and social programs. Job expense and child care expense must also be considered. And finally it is essential to consider the working of the welfare system and social programs as they relate to the working of the economy, as the goal programs should be attractive in both economic and social terms.

The optimistic reformers believe that simpler, fairer, more easily administered, and more work-incentive-oriented programs can be designed and can achieve broad acceptability in Canada. The pessimists doubt that this outcome is possible unless Canadians are prepared to bear the substantially higher costs to government of such programs. Those who believe that within broad social programs of wide participation, changes can be made that will have good social and economic effects and not be expensive, would join the optimistic side of the debate. But, in the end, because some additional expense would likely be involved, the issue may yet boil down to that of willingness to "pay the piper."

Inflation is an area where some progress is evident, and the federal deficit is an area where there is potential for progress as a result of the May 1985 Budget. More complex are the prospects for increasing the number of jobs, enhancing productivity growth in selected industries, or using the recent gains from trade that could influence Canada's ability to meet targets for what we regard as a proper mix of domestic and foreign savings. Let there be no misunderstanding. Canada's trade performance in 1984 was extraordinary, particularly in exchanges with the United States. In addition, Canada is now well within the Council's net capital inflow target of about 2 per cent of GNP or less. But the threat of protectionism is there, and events could turn against Canadian exporters. Furthermore, the current trade performance, in a relative sense, is a result of import weakness as much as export strength. As the balance between exports and imports returns to normal, Canada's current favourable position could deteriorate substantially. We shall return to this issue later.

Although the situation is much better now than just a few years ago and some progress is currently being made, employment growth remains an area of concern, as does growth in total factor productivity. It is in these areas that greater emphasis should be placed in the future. The attitude today appears to be that the private sector ought to take the initiative and that the job of government is to set the fiscal structure right – to set the proper incentives. The streamlined six-program package recently introduced by the Minister of Employment and Immigration places more emphasis than ever on the need for direct involvement of business and the provinces. Less emphasis will be placed on short-term work training schemes, such as Canada Works, Critical Skills Training, General Industrial Training, the Job Corps, and so on. The business sector and the provincial governments will play a larger role in new programs that emphasize on-the-job training as well as local involvement in designing training projects. For example, representatives of the small and medium-sized business community have suggested that their sector could make a large contribution in the areas of jobs and productivity if policy provides a favourable environment and incentives. In this sense these new government policies have given them a chance to prove their mettle.

The recent budget measures, the Western Accord, and interest in the reform and simplification of the tax system also encourage us to hope that a framework is emerging in which private sector initiative can be counted upon to ease the jobless rate. At the same time, however, Canadians have heard increasingly of the prospect of unemployment growth in the future, caused by the impact of new technologies that will replace people with machines or by lack of growth in aggregate demand. Various implications are drawn, including the necessity of massive restructuring of social and economic life in many areas if a low level of unemployment is to be regarded as a reasonable target. While we are concerned by these issues, we do not share the pessimism of the doomsayers.

Our pessimistic alternative of Chapter 2 puts the issue of jobs and job creation in proper perspective. It would not take much to bring about a set of general economic conditions whereby the unemployment rate would remain in the double-digit range over the next five years. It is clear from these results that if real growth falls below 3 per cent a year on average or if a period of recession emerges during the late 1980s, then the unemployment rate is much more likely to average above 10 per cent during the next five years. The outlook also depends on the dynamics of labour force growth. Poor economic conditions usually bring reduced opportunity, with the result that many who are seeking work drop out of the labour force; the opposite is true during good times, when labour force growth quickens. For the unemployment rate to decline, job growth must absorb not only those labour force entries stemming from normal population growth but also those entrants who are drawn to the labour market because of increased opportunity. In many cases the latter are less skilled and younger. It is because the outlook for job creation is not yet on solid ground in this and other areas that we feel some direct action is in order. We shall also return to this issue later.

In past Annual Reviews the Council has not set targets for investment performance. Healthy investment growth is regarded as a way to increase economic growth, enhance productivity performance, and create jobs but not as an end in itself. New methods, new ideas, or new equipment are introduced because they improve performance in the marketplace, enabling a firm to price below its competitors or permitting improvements in efficiency in the public or parapublic sectors. In short, real income gains are the expected result. Recently, however, investment performance has been poor. In absolute terms, investment in Canada is still below the peak reached in 1981; and, relative to GNP, it is at a 30-year low. There are both short- and medium-run forces at work, some of which may be insensitive to policy. One factor emerges clearly from the analysis. Aside from replacement needs, businesses do not invest unless they foresee adequate markets in which to sell their new or additional products; and, if these markets dry up, even replacement activity will eventually fall off. Consumer demand, including the demand for exports, is the most important factor determining investment – more so than interest rates or the appearance of new technologies, although these are of great importance for small and medium-sized enterprises.

Although consumer demand is the prime factor in investment decisions, an important question is the extent to which Canada's financial institutions (banks, trust companies, insurance companies, investment dealers, and financial cooperatives), together with the regulatory apparatus, are able to support fully a strong period of investment growth. Despite the weak spots that have appeared recently, we believe the Canadian financial system is robust and able, in the long run, to support the growth needed to meet our targets.

Several factors underlie this conclusion. First, given the degree of adjustment that is required to cope with a rapid shift in inflation from rising double-digit levels to a rate of 4 per cent or less, weak spots are bound to appear in any financial system. Asset valuations are bound to tumble and to exert pressure on the equity base of financial institutions. Beyond this, commodity prices often deteriorate rapidly, adding to the strain on financial institutions that have a high proportion of their assets directly or indirectly related to a particular sector of commodity production or distribution. Indeed, the remarkable feature has been the ability of the financial system to cope with rather large insolvency and liquidity problems without financial crisis and without any sign of credit rationing. Second, by now most of the adjustments to lower inflation rates are complete, as are the adjustments to lower commodity prices. Third, most banks have both strengthened their capital base and greatly increased their provision against loan losses. The banks also have less foreign-loan exposure as a result of an improvement in the foreign debt picture. Fourth, the external credit positions of the Bank of Canada and the federal government are strong. Fifth, the management and regulation of financial institutions in Canada have been strengthened. Finally, while there is some uncertainty and some disagreement among the interested parties about changes in the regulation of financial institutions by the federal and provincial governments and about the reform of the Canada Deposit Insurance Corporation, an active process of change is in the works. That process will surely result in improved solvency of the system and more protection to customers. That issue is one that the Council will be exploring in greater depth in the coming year.

What about the financial health of nonfinancial corporations in Canada? Substantial recovery has taken place since the recession of 1981-82, but there remain some uneven areas. For the consumer durable industries, most indicators of financial health (real sales, real profits, margins, the return on assets and equity, debt/equity ratios, and cash-flow/debt-servicing ratios) were stronger by the fourth quarter of 1984, compared with pre-recession levels. For the regulated energy and communication industries, the signs of improved financial health are nearly as strong as those of the consumer nondurable industries. At the other end of the spectrum, however, many resource-related industries, along with manufacturers and distributors of industrial goods, remain in less healthy shape financially than they were, on average, between 1977 and 1980. In the aggregate the net result is a modest improvement in the indicators of financial health, except for the return on equity, which has remained below pre-recession levels, and weak cash-flow/debt-servicing ratios. These last two results are not surprising in view of the modest recovery of real profits in key sectors, together with the relatively high debt and high real interest rates.

Thus we think that our package of targets for the rest of the decade is now closer to being within reach, given the policy setting that is in place and the adjustments that have already occurred. For example, a massive downscaling of expectations has taken place since the late 1970s. Inflation has been brought to relatively low levels. Compared with current income levels, consumer and mortgage debt is not high for Canadian households. The financial health of nonfinancial businesses has been rebuilt considerably. The resource base of Canada continues to be quite strong. Conventional light-oil reserves continue to fall, but almost all other forms of energy production continue to expand at an increase in real costs that is not all that steep. The trends for cereal crop production and fish landings are expanding. The reserves of metallic minerals continue to be good by world standards. Only for forest products is the maintenance of potential output somewhat disappointing because Canada has not yet developed an adequate tree-cropping program.

After a pause, research and development activity in Canada appears to be on the increase. Widespread interest in innovation and in the diffusion of new technologies has arisen, supported in part by new developments and by a strengthening of selected government programs. A new generation of young entrepreneurs is appearing, and the important contributions to growth by small and medium-sized businesses are now recognized and encouraged. Programs of skill development have been redesigned in recent years so that they are more in tune with current needs and more closely integrated with on-the-job training and the private sector. While there are sectors in which regulation continues to increase, sometimes quite appropriately, the country appears finally to have turned in the direction of reducing direct economic regulation. Federal-provincial cooperation appears to have been reborn. Canadians seem to be more interested in developing their ability to compete successfully in international commerce. While some believe it is too little and too late, a significant program of deficit reduction and debt control by the federal government is now under way; and the provinces never did end up in as difficult a position as the federal government in these respects. Not everything is ideal, of course, but we believe that there is a far longer and weightier list of pluses than minuses underlying Canada's medium-term prospects.

These pluses and minuses can be grouped together into two broad sets of forces that influence movement towards our targets and thus towards higher growth in real income. They include those forces which determine the strength of demand for goods and services and those which influence the supply capabilities of Canada's market economy. In this Review we have examined many aspects of both the demand and the supply sides that have a bearing on growth in real income. The current strength or weakness of certain components of demand, such as export performance or investment spending, the mix of monetary and fiscal policy, and the less tangible notions of inflation expectations and consumer and business confidence, have been emphasized on the demand side. On the supply side we have pointed out the importance of skills and skill management, the use of best-practice technology, scale and utilization rates, and allocative flexibility. What brings all of these items together in general discussion is that each has a role to play in any medium-run strategy aimed at increasing jobs or the growth of real income.

Real Income Growth as a Medium-Run Strategy

Raising the Level of Consumer and Business Confidence

The events of the 1970s and early 1980s have had their toll on the level of confidence and on the economic indicators most sensitive to confidence. There have been surveys conducted by economists, sociologists, and psychologists, designed to uncover those factors most influential upon, and representative of, consumer and business attitudes. Often, their findings have suggested that attitudinal data are closely related to general economic indicators, such as the rate of inflation, the unemployment rate, the personal saving rate, the level of business profits, and the rate of investment. For those who spent time in the ranks of the jobless or bore the burden of a mortgage or farm debt with a real interest rate of 10 per cent, or who faced the prospect of bankruptcy, the problem of reduced confidence was not only real but immediate. For the majority of employed Canadians the erosion of confidence in the late 1970s and early 1980s was probably slower but eventually just as real. A high saving rate, a low investment rate, and stop-go demand for both consumer and investment goods, capped by the recession of 1981-82, were the result.

Probably much more could have been done by governments to stimulate demand during this period of economic recession if their large deficits had not eventually been perceived as also contributing to the erosion of confidence, especially in the early 1980s. In fact, the deficits came to be regarded as so closely related to the problem of confidence that their reduction was one of the first targets of government policy designed to restore fiscal credibility and confidence. The May 1985 Budget put in place a new fiscal regime that many believe will defuse the deficit issue and lead to increased confidence in federal fiscal matters within the business community. As indicated, some have even urged more fiscal action than was actually taken by the federal government in its May Budget. Certainly, quicker progress in the area of deficit reduction could be made at less cost if actual results turn out to be closer to the optimistic alternative of Chapter 2. One way to foster such an outcome is to restore the volume of investment in Canada from its current low level to one more in line with average postwar performance, particularly in relationship to GNP.

The analysis of Chapters 4 and 6 indicates that there is room for improvement here. A robust recovery of investment would improve the fundamental performance of the Canadian economy and at the same time provide governments with more room for manoeuvre. In the short run an indigenous improvement in investment performance would reduce the federal deficit by strengthening the economy, and in the long run it would add to Canada's capacity to produce.

Investment and Taxation

The May 1985 Budget, with many of its measures directed either directly or indirectly at activities designed to improve business confidence in Canada, should be regarded as a first step. Tax reform, particularly reform of the corporate tax system, if not the next step, should soon follow. A principal concern here is that new investments in Canada bear very different tax burdens. In fact, the tax system itself may be as important as business judgment in determining the pattern of investment. The preliminary findings of research under way at the Council indicate that some types of investment that would otherwise fail the test of the market receive substantial subsidies through the tax system, while other types of investment must hurdle substantial tax penalties before a go-ahead is indicated. The implications of these findings are that capital may not be allocated to its most productive use and that current and future output, as well as the real growth rate of the Canadian economy, could otherwise be higher.

These non-neutral elements in the tax system constitute, in fact, an implicit, unacknowledged, and often unintended form of industrial strategy. An effect of the tax system on investment that is certainly unintended, however, arises from the interaction of the tax system with inflation. Preliminary Council research indicates that effective tax rates on new investment rise with inflation. A number of *ad hoc* measures have been taken to address this problem in past years. Thus the introduction of many corporate tax preferences – such as investment tax credits and accelerated depreciation – has been justified partly on those grounds. Preliminary results from our research indicate that the effects of inflation in raising effective tax rates on new investment have not been removed by these *ad hoc* measures.

Concern about the effects of taxation on long-run economic goals is not confined to Canada. Measures to remove these non-neutral effects in corporate income taxation are a common feature in the tax reform plans of many of Canada's closest trading partners. A number of OECD countries – including the United Kingdom, the United States, Denmark, Sweden, Ireland, Australia, and New Zealand – are currently examining the structure of their tax systems and proposing substantial change. A discussion paper accompanying the May 1985 Budget advanced many proposals in this area. The Council thinks that these proposals merit close attention and intends to comment on them in late 1986 when the results of its current research on capital taxation are reported.

Tax reform may include some initiatives that go much further than simply removing non-neutral effects in the corporate income tax. Discussion among tax experts in the field of public finance in recent years has also concentrated on the question whether alternatives exist to the income tax base that would be superior in attaining the goals of simplicity, equity, efficiency, and growth. A large body of such expert opinion now favours the adoption of consumption rather than income as the tax base for the system.

Nevertheless, no major government has yet been prepared to adopt suggestions for replacing all income tax elements in the taxation base with a consumption tax. What is evident, however, is that a number of governments (e.g., in the United Kingdom, New Zealand, and Australia) have recently increased, or are proposing to increase, their use of consumption taxes while decreasing their use of income taxes.

In some of these countries, inferior forms of indirect taxation (e.g., at the wholesale level) have been replaced by consumption taxes that are considered more efficient (e.g., value-added taxation), while in others consideration is being given to such a change. It is important to study these foreign tax initiatives, because a substantial fraction of the revenue of the Canadian government is raised by an indirect tax – the manufacturers' sales tax. Among other things, that tax is administratively complex and discriminatory; it penalizes exports and favours imports, and it involves economic waste equal to a large fraction of the revenue raised.

While we believe there is a good case for re-examination of the structure of Canada's tax system, we also believe that what Canada needs is not only reform but also a stable structure of taxation. Frequent change has unfortunately marked the development of our tax system. For example, in the first 100 years after Confederation new federal taxes were introduced, or old ones abolished, on 17 different occasions. More recently, there were 55 major changes in federal taxes in the decade of the 1970s.[5] A noted tax practitioner has alleged that "even in a dull year, we appear to be turning out over 100 pages of amendments to the Income Tax Act."[6] An obvious inference is that fluidity in the tax structure to the extent indicated adds needless difficulty to the various planning stages of investment projects. It follows that government can contribute to lessening uncertainty in investment by reducing the uncertainty caused by its own actions.

Investment and Resource Development

Resource development has also played an important role in the past and could play the same role in the future. In this area many of the longer-term determinants are also sensitive to policy; thus adjustments are possible that would improve performance. Some adjustments have already begun. For example, the Western Accord has removed many of the obstacles that appeared in the energy area once oil prices reversed their upward trend and the tax structure and other elements of NEP and its subsequent amendments became unattractive to both domestic and foreign investors.

In Chapter 6, our discussion of megaprojects reviewed the impact made by these massive investment undertakings on activity during the past decade. Until the 1981-82 recession, these projects were a prominent feature of Canadian investment development. Indeed, as recently as 1982 many Canadians were concerned that investment development during the rest of the decade could overstrain the Canadian economy because of the prospect of many large megaprojects all occurring at the same time. As it turned out, many of these projects were doomed by circumstances, including falling energy prices and demand, high interest rates, more severe world competition, financial overcommitments, and restricted funding. The worry of an excess of megaprojects was replaced by pessimism that investment might be weak for a long time.

Of late, a seemingly more viable approach has appeared. Studies now point to substantial investment in large projects that is likely to occur during the next decade. The word "mega" is less often used, and the "bubble" atmosphere has blown away. Still, various pieces of evidence, including the most recent surveys of "major" projects (over $100 million each, in constant dollars), point to well over 100 billion dollars' worth (in constant dollars) of actual and potential investments to be undertaken during the next decade. Also, many large projects have been broken up into a series of smaller stages, permitting more flexibility in the development of what will cumulatively result in very large projects when completed. The phasing of development of the *in situ* oil sands extraction facilities at Cold Lake and Wolf Lake are among the best-known examples. While many of the larger projects are energy-related, they are located in many different areas and will have an impact on all regions of the country. In addition, what is on the shelf in terms of worthwhile smaller public and private investment projects for Canada could build up rapidly, sooner or later to be drawn upon, as capacity utilization, profitability, financial health, and market opportunity emerge. Since many such projects require long lead times, perhaps spanning one, two, or three business cycles and many federal and provincial budgets, it is also important to keep in mind our previous remarks on tax reform. Uncertainty must be kept to a minimum, and governments must remain sensitive to the need for continuity or at least the need to maintain a moving equilibrium in the rules of the game during any period of tax reform.

Investment and Technical Change

Western industrialized countries are progressing through a period where the availability of new technology could change the medium-run investment climate for the better. Japan is already well into this period. The age of robotics and information-based technology will have a double-barreled effect on both the Canadian manufacturing and service sectors. Productivity improvements and new occupational opportunities will occur, but adjustment assistance and retraining may be required for those workers with skills unsuited to the new work environment. The issue of job dislocation and adjustment costs will be dealt with shortly. First, let us examine another aspect of the problem – that is, the speed with which these new manufacturing methods and this new information-based technology might be adopted. The analysis of previous chapters indicated that a slowdown in the adoption rate of technological innovation in the 1970s did contribute to poor performance in the growth of total factor productivity during that period. What about the 1980s and 1990s? Will Canadians lag behind, or will they keep abreast of new developments?

In *The Bottom Line*, the Economic Council made several recommendations directed at improving the rate of technological change. The Council argued that government policy, while continuing to focus on increased R&D spending, should pay much more attention to the adoption of new ideas, products, and processes that originate abroad, as well as to the diffusion of new products and processes, whatever their origin. The Council also argued that the focus of policy, from the point of view of industrial structure, should be widened. Far more attention should be devoted to promoting quicker technological change in the nontraded goods and services sectors. The Council also urged that government assistance to research and development be subject to more formal cost/benefit analysis, though it recognized that it is important to limit detailed bureaucratic burdens, especially for small and medium-sized businesses. The urgency in these areas remains. Indeed, the possibility of a formal agreement securing trade liberalization between Canada and the United States or of an expanded multilateral trade agreement adds urgency to each of these areas, as does the advent of robotics and the new information technology. To take full advantage of the expanded markets will mean new or expanded production, distribution, and servicing facilities. Based on past experience, market forces might not be enough to ensure high adoption rates. And worse still, some areas of current policy and business practice may hinder this result.

Government policy or business practice that hinders the process of adaptation should be modified. For example, revisions to competition policy could remove some of the legal barriers to joint R&D ventures. Existing legislation limits the right of Canadian firms to participate in large cooperative R&D projects, even though individually each firm may not be able to make the necessary amount of investment. The fault does not lie wholly with existing legislation, however. Many private sector firms are unwilling to participate in cooperative R&D efforts because they are reluctant to share their technological know-how with actual or potential competitors. Questions also arise as to ownership of the fruits of cooperative R&D ventures and, consequently, as to the right to use and license the resulting technologies. While these concerns are legitimate, they should only pose problems of venture organization and should not remain as insurmountable barriers.

Cooperative R&D ventures have been set up in a number of countries. In Japan, the Institute for New Generation Computer Technology (ICOT) brings together eight well-known microelectronics firms that benefit from contract funds and research results. In the United States, the Microelectronics and Computer Technology Corporation (MCC) brings together 13 companies, many of which are large microelectronics firms, to conduct joint research on advanced computer technology. Such cooperative R&D ventures are formed when the scale of the technology to be developed far exceeds the capabilities of any one firm and when the competitive threat from abroad is seen to be pressing. The rules of the game are established when the venture is formed, and they set out provisions with respect to ownership of technological know-how and access to the technologies that are developed. For Canadian firms that are small relative to the advanced technologies being developed today, joint R&D ventures could bring many benefits.

Restrictions on foreign investment might also be reviewed. The Investment Canada Act has liberalized much in this area, but restrictions have not been relaxed in certain sectors that are believed to be "of strategic importance." These restrictions have the potential effect of slowing down the diffusion of technology. At the same time, it should be recognized that most countries protect some industries from foreign investment for strategic reasons – the communications industry, for example. And while foreign-controlled firms can be a source of sophisticated technology, they are not the only source, and in some industries foreign-controlled firms do not necessarily use advanced technology. It is important, therefore, that alternative means of tapping foreign sources of advanced technology also be explored.

Skills and Skill Management

When pursuing increased productivity and profit objectives it is essential that managers of organizations in all sectors of the Canadian economy apply to human resources the same energy, imagination, and skill that are used in husbanding physical capital. The increasing technological sophistication of the production process places an additional premium on the ability to blend harmoniously advanced equipment, materials, and processes with the expertise and aspirations of the work force. If flexibility is the hallmark of the new technologies, then human beings too must be adaptable and versatile. In turn, however, this means that managers must be prepared not only to evaluate and acquire state-of-the-art machinery but also to adopt innovations in the organization of work that will successfully accommodate human needs. The concept of investment, in other words, must be systematically applied not only to physical capital, but to the nurture and care of human resources as well.

In some sectors the productivity and cost improvements resulting from the introduction of new technologies may expand output and job opportunities. Indeed, preliminary Council research on this subject indicates that the employment record of the "high-tech" sector of the Canadian economy in the last decade has been very good. It remains true, however, that in some industries and occupations workers will be displaced, while in others substantial retraining may be necessary. Indeed, the magnitude of potential adjustment problems is thought to be considerable for two reasons – namely, the sheer rapidity of the current wave of new products and processes, and the very broad extent of the applications of the new technologies. Not only will robots and computer-assisted design and manufacturing (CAD/CAM) combine to affect the number and nature of manufacturing jobs, but the automation of the service sector will mean that very few Canadian workers will be left untouched by technical change in the coming decade. For those whose skills mesh with the new methods of the late 1980s and of the 1990s, income gains will surely be part of the picture. For those whose skills become outdated, retraining and adjustment assistance will be required. The same is true of the possible consequences of an expanded trading relationship with the United States or within the GATT framework.

One thing is sure. The Canadian work force, from production worker to company executive, has the potential to face the technological revolution. During the 1970s and early 1980s little hard evidence was uncovered to suggest that labour quality in the aggregate was a serious problem. In Chapter 3, only an inconsequential part of the slowdown in total factor productivity could be traced to that factor. General education continued at a high level, and new ways of delivering training and assistance were introduced – government vocational training, retraining, and relocation plans (coupled in some cases with income support from the UI program), new labour-management relationships, and so on.

Nevertheless, technological developments in the years ahead suggest the need for some change of emphasis. When the new information technology becomes the nerve centre of business and when robotics replaces muscle, education at all levels – primary, secondary, postsecondary, and university – will remain the backbone of western industrialized democracies in the future, just as in the past. Traditional study programs and their method of delivery will require modification, however. It is apparent, for example, that the traditional cycle of schooling, on-the-job training, and a lifetime career is becoming outmoded. Re-education and retraining at several junctures in their working lives will be required for most Canadian workers. Moreover, while training in specific skills associated with new technologies will continue to be important, a more general analytical capability will be at a premium. For example, if a large and rapid increase in R&D activity in Canada is desired, a serious bottleneck in the availability of R&D skills could emerge, particularly in view of recent domestic trends in the development of such skills. This is simply a corollary of the speed of technological change referred to earlier: rapid obsolescence of products and processes – and of the skills embodied in them – requires a work force that is adaptable, flexible, and versatile.

The National Training Act of 1982 was designed to develop specific vocational skills deemed through occupational forecasts to be in demand. The labour market, however, is being transformed in ways that suggest that this approach alone may not constitute the most favourable training strategy. Inherent in the present policy is the notion of a consistent occupational structure in which the numbers may change but the skills and jobs will not. However, a number of developments – most notably technological innovation and new production management practices – show this underlying assumption to be too static. The rapidly evolving environment is leading to continuous changes in the levels of occupational demand and, more fundamentally, in the occupations and attendant skills themselves. This makes vocational training difficult, particularly when it pivots on investment in specific skill packages. Adaptability and flexibility in the face of rapid change must be central to effective training policy now. Since one cannot always predict where the new jobs will be, generic training – learning a family of skills – may be the most viable approach. From this base, workers could then intermittently take up retraining throughout their working lives in response to the obsolescence of old techniques and the emergence of new ones.

Expanding Markets, Trade, and Scale

The Council has always believed that trade liberalization, or trade enhancement, though by no means a panacea, offers one of the better means for increasing the level of, and growth in, the real per capita income of Canadians. The Council takes the position also that this country should follow a two-track approach towards that end. Canada should vigorously support new initiatives for multilateral trade negotiations (MTN) within the GATT framework, in parallel with negotiations on a narrower basis (though still in line with the GATT guidelines) towards a regional arrangement involving at least the United States.

Public debate on this issue has been intense, especially because of recent suggestions from many quarters for a Canada-United States arrangement. In these circumstances, it is important that Canadians ask the right questions and make the right comparisons. All too often, lip-service is paid to the potential of a new MTN round, while any narrower arrangement is condemned on grounds that would apply to multilateral liberalization also.

The benefits of trade liberalization depend largely on the availability of economies of market size in both the production and distribution of goods and services and on the ability of each country to specialize in activities in which it has a comparative advantage. Even without the scale economies that might be achieved in larger markets, the benefits of specialization would still exist. However, for countries like Canada – one of the few remaining industrial nations without tariff-free access to a market of at least 100 million people – the major part of the potential gains from trade turns on the question of economies of market size. It may well be, as some claim, that the potential gains are less now than they would have been in the past, partly because Canada has already improved its access to larger markets from previous trade negotiations and partly because of the spread of such techniques as CAD/CAM, which have brought efficiency to short production runs. It may be, too, that changes in competitive conditions, market behaviour, specialization, and technology, rather than the economics of market size, have increased in importance. Nevertheless, as noted in Chapters 3 and 4, recent research for the Council suggests that substantial economies of market size could still be achieved by this country. Canadian plant scale remains substantially below that of the United States in manufacturing, and roughly one-third of the estimated average 25 per cent gap in manufacturing TFP between the United States and Canada can be traced directly to market-size problems.

To the extent that trade liberalization would provide gains from these sources, it would increase Canadian real income in two ways. First, all Canadians as consumers would benefit directly from lower prices of both imported goods and some domestically produced goods and services. Second, the rationalization of the industrial structure that would take place – and which, to some extent, has already occurred – would lead to higher real incomes for many of Canada's productive factors, including labour, as productivity increased. The net result would be a higher base upon which future productivity growth could take place.

To say that Canadians generally will benefit in this fashion from trade liberalization is of small consolation, however, to a company that may go out of business or to a worker who may lose his job as a result of trade changes. We must never lose sight of the fact that we are dealing not with statistics but with people. The Council recognizes that the potential benefits from any strategy of trade liberalization must be compared with the costs involved. Thus the general case for trade liberalization rests on a second major question. How extensive and costly would adjustment to trade policy changes be in terms of unemployed physical capital and, more important, in terms of people?

Critics of trade liberalization, whether it be multilateral or bilateral, claim that the costs of adjustment to trade shocks have been greatly underrated. That claim turns on a question of fact, and it is one that the Council will be addressing in greater detail over the coming years. But one thing is sure: Canada will pay considerable costs in terms of forgone real income if its industry does not adjust positively to the changing world economic environment.

In fact, of course, not only is the process of adjustment to trade shocks and other changes going on all the time, but more and more it appears that this process has not been as costly as many had anticipated. The Tokyo Round brought about a very substantial lowering of tariff barriers, with Canadian tariffs on manufactured products being effectively cut in half. This did not result in the demise of whole industries – we have not been "de-industrialized" nor have we reverted to being "hewers of wood and drawers of water." Instead, the adjustment has meant substantial expansion in some areas; in others less favourably affected, the result has largely been increased specialization, and there has been a slowdown in the number of "births" of new firms in declining industries rather than an increase in the number of "deaths" of existing firms. Clearly, import penetration has increased considerably in many manufacturing industries over the last decade, but the resulting employment losses have been more than offset by increases in manufacturing exports and domestically directed goods and services.

This is not to dismiss the adjustment burdens. What one would really like to do would be to identify the industries in which output and employment would expand or contract. Several researchers have attempted to do this, but because of the underlying assumptions that have to be made, the results, though interesting and perhaps generally useful as a guide, certainly do not provide a precise blueprint of just how adjustment would proceed. And, in fact, only a few studies deal with the employment adjustment process in the import-sensitive industries, such as clothing, textiles, and electrical products. These studies, along with other evidence, show two things: first, as firms have retrenched, quite a substantial adjustment of workers has taken place; and, second, the maintenance of quotas (in clothing and textiles, in particular) to protect jobs has imposed a very heavy cost on consumers. For those workers who were displaced, the biggest problems occurred in some of the single-enterprise towns in Ontario and Quebec. The hardship was particularly concentrated among women and older members of the work force. This was offset in some circumstances by the success of other family members in finding or holding alternative employment. But it is not difficult to find some individuals who were forgotten during this process of change. In the future it will be essential to avoid such neglect.

At the broadest level, the whole process of labour adjustment to structural changes in the economy, whether because of trade or other factors, was examined by the Council in last year's Annual Review.[7] The analysis there was based on data for the 1970s, a period during which the Canadian labour force grew by over 3 million. The figures showed that for every worker displaced by structural change, four found jobs as a result of increases in aggregate demand, real income and consumption, and investment.

This brings up another point that must be given considerable thought in any negotiations. Adjustment is much less burdensome if the nation is close to full employment. The fact that this is certainly not the case at the present time will make the background for any trade negotiations more difficult. Whatever strategy is followed, however, the negotiations themselves will be protracted, and a fairly lengthy transition period will be required. But even that will not be sufficient. Even in the absence of trade policy changes, Canada is strongly in need of better programs to smooth the adjustment process and to spread the burden of adjustment, since that burden tends to bear more heavily on some industries and groups than on others. But we stress the fact that the cumulation of recent work by the Council and others suggests that such problems could be surmounted more easily than some opponents of trade liberalization claim. And, as noted earlier, the Council itself is already mounting a research program to address these questions in more detail than ever before.

With this as background, let us compare some of the options that have been proposed. One option contends that substantial gains in real income could emerge from largely domestically oriented policies, including, for example, the domestic rationalization of industry and accelerated spending on research and development. The Council does not believe that domestically oriented policies and trade liberalization are mutually exclusive. Indeed, we have argued extensively for measures to accelerate innovation in this country. We do, however, question the wisdom of exclusive reliance on domestic policies that are likely to involve much greater government intervention in the marketplace and that could bring pressure to raise Canada's own trade barriers in response to "infant-industry" pleading. Such action would lead to direct losses for Canadian consumers, and it would risk retaliation by Canada's trading partners.

If trade liberalization is to be pursued along with relevant domestic policy measures, what form should it take? In the Council's opinion only two options could possibly offer the substantial economic gains that Canada seeks: extensive multilateral trade liberalization, which would imply the removal or reduction of both this country's own tariffs and those of other nations – and, perhaps now even more importantly, of nontariff measures (NTMs); or some form of comprehensive regional arrangement involving at least the United States. Because so much of our trade is with that country, any arrangement that excluded the United States would involve the risk of enormous losses resulting from U.S. retaliation, as well as, for a variety of reasons, smaller potential gains.

Unquestionably, multilateral trade liberalization offers the greatest potential net gain for Canada's real standard of living of any possible trade policy approach, and it would also appear to be politically more acceptable. It should be noted, of course, that such an approach would likely involve more widespread adjustment than a narrower regional arrangement, especially since it would imply more imports from low-wage developing countries. And that adjustment would probably be more extensive, particularly in Quebec, than any adaptation resulting from a regional arrangement involving the United States.

Trade negotiations, whether at the multilateral level or with the United States, are likely to be lengthy and protracted. The really critical question, therefore, is whether a new MTN round can be expected to achieve substantial progress at all. The GATT machinery, though it has served this country well in the past, has developed a number of weaknesses. Many developing countries, in particular, balk at the continued dominance of the industrialized nations in the MTN process, and periodic discouragement about the prospects for further substantial progress through GATT is endemic. The Council does not fully share that discouragement. We do believe, however, that this country should avoid putting all of its eggs in one basket. Thus Canada should vigorously pursue preparations for a new round of multilateral trade negotiations, with special emphasis on strengthening the GATT machinery and on new initiatives to overcome the objections of the developing nations to the MTN process. An additional complication relates to the fact that a great deal of interest has been shown in extending the scope of MTN to include traded services. While many of these services presently lie beyond the GATT framework, their growing importance has led to the desire for their inclusion in any forthcoming discussions. Given the fact that many business services are closely related to the existing trade in goods and given the wide range of barriers facing many of these flows, the extension of liberalization negotiations to services, whether on a bilateral or a multilateral basis, is worthy of consideration. Such consideration would give additional emphasis to the need to strengthen the GATT machinery.

Vigorous pursuit of a new MTN round and negotiations for a narrower regional arrangement with the United States in particular are not mutually exclusive either. Indeed, some have argued that a bilateral arrangement in line with Article XXIV of the GATT could be seen as stimulating progress towards wider trade liberalization. Whatever the merits of that suggestion, Canadians must recognize that any such arrangements with the United States involve some additional considerations, particularly the question of political, social, and cultural sovereignty.

At the present time there is perhaps more support in this country than ever before for undertaking bilateral negotiations with the United States. A majority of the provincial governments favour this approach, as do major business interests. Others, including organized labour, are, to put it mildly, less sympathetic. And, unfortunately, any suggestion of Canada-U.S. free trade, with all its historical connotations, still arouses strong emotions in this country.

The proponents of Canada-U.S. arrangements base their position on several points. First, there is the argument that the GATT process will take too long. As we have noted, however, Canada-U.S. negotiations would not be an overnight matter either. Second, and more important, there is the fear that further MTN negotiations will prove to be ineffective altogether. While we are not prepared to accept that argument at the present time, we recognize that prudence demands that Canada at least explore much more intensively than hitherto the potential benefits and costs of a bilateral arrangement. Third, supporters of the bilateral approach argue that such an arrangement would provide a very large proportion of the economic benefits of a multilateral arrangement and that the costs of adjustment would not be as severe as many think. The Council's own research suggests that there is a good deal of merit in this argument. Fourth, proponents point to the need, in the face of growing protectionist sentiments in the United States, to get behind the "security blanket" that might be provided by a formal treaty.

But there is a catch! Neither the last question nor some of the others raised by the opponents of a bilateral arrangement – a potential increase in the level of foreign ownership or a loss of sovereignty because of the possible need for extensive harmonization of many policies (e.g., taxation, regulation) – can be answered fully until Canadians clarify their own objectives and find out in actual negotiations what the United States would demand in return. We do not agree, however, with the idea that because there are risks negotiations should not be undertaken at all. Thus, parallel with its preparations for a new MTN round, Canada should also intensify its efforts to open negotiations with the United States at the earliest possible opportunity, with a view to achieving a comprehensive, bilateral liberalization of trade in conformity with the requirements of Article XXIV of the GATT.

Allocative Flexibility

An often unintended side effect of government policy is the introduction of rigidities into the market for final products, labour, and even financial and real capital. These rigidities reduce efficiency and thus total factor productivity. In most instances they also have second- and third-order effects that influence the free movement of prices or other major economic indicators, such as those in our list of targets. The analysis of Chapter 3 has indicated that the reallocation of resources – that is, the shift of resources from less to more productive activities, made less and less of a contribution to the growth of TFP as Canada moved from the 1950s to the 1970s. One of the factors contributing to this reduced contribution was the tailing-off of the movement of resources out of rural areas, and out of farming in particular, to a more urban industrial setting, as agricultural methods changed for the better and manufacturing grew in importance. During this period, there was increased use of regulation, of tax incentives to influence investment decisions both between sectors and regionally, and of industrial subsidies and programs that influenced the regional flow of resources. In this context, recent research by the Council suggests the need for a more thorough assessment of the rationale for government intervention in the marketplace and of the effects of any resulting impediments to the free operation of markets. Our findings indicate that intervention often occurs without sufficient attention to its overall effects or to its costs and benefits.

For example, will regional differences in income, productivity, and economic growth be altered by future changes in regional programs and policies? As it turns out, relative productivity disparities between Canada's regions have not changed much in the last 20 years, despite a large program of economic development focused on the poorer regions and a large program of transfers to governments and to people located in poorer regions. This is in contrast to reduced regional disparities in income received, but this latter result is due mainly to the transfer program. In that sense, important issues arise from the current policy concerns related to the re-examination of the UI program, the proposed changes in social programs, the prospect of reduced federal transfers to the provinces, and the 1986-87 federal-provincial negotiations concerning equalization and other transfers.

The same issues arise if we ask a different set of questions. What currently explains the past changes in regional disparities in earned and received income? More importantly, what has been the consequence of social programs for the growth and productivity of the various regions? Furthermore, if one wants to reduce regional disparities in earned income and reduce the dependency that has become a by-product of the current mix of social programs, what changes would be most appropriate? Finally, has the distribution of population and economic activity in Canada been altered significantly by the structure of economic development and the related transfer programs? If so, at what benefit and cost?

In considering these questions, two themes emerge. First, Canada has a large and complex set of programs that affect regional incomes, sometimes in deliberate ways and sometimes in inadvertent ways. It is therefore essential to consider not only the various pieces one by one but also the package as a whole, along with the important interdependencies. Second, it is necessary not only to consider the benefits received both directly and indirectly by the residents of a region but also the costs that these residents bear. The residents of a region receive many benefits from the federal government, but they make large payments to that government too, in a variety of ways.

In recent years the populations of the poorer regions of Canada have received benefits from the following programs; equalization payments from the federal government to the governments of the have-not provinces; established program transfers from the federal government to the provinces related to health care and postsecondary education; federal transfers to provincial governments under the shared-cost welfare programs (the Canada Assistance Plan, or CAP, in particular); federal OAS/GIS and family allowance transfers to individuals; CPP/QPP benefits; subsidies to various regional-development and job-creation schemes; UI benefits (including fishermen's and regionally extended benefits); and, under the NEP, subsidized oil and petroleum products. The residents of the poorer regions also contribute directly or indirectly to the costs of these programs through contributions to the UI scheme and to the CPP/QPP system, and they pay a variety of federal taxes. For there to be a net transfer from the federal government, its payments to those in the poorer provinces must exceed the payments they make into federal coffers, including federal tax payments.

The Council and others have examined the equalization system as it exists and as it might be more appropriately designed.[8] In both cases the contributions of the paying and receiving regions to the federal tax system that are required to meet the equalization bill have been taken into account. The Council has shown that an appropriately designed equalization scheme could contribute to both efficiency and equity within Canada. Others have suggested that equalization promotes equity but at the cost of efficiency, even if the ideal system were in place. The heart of the argument turns on the differences in revenue and current public services provided from different resource endowments and on the optimal population distribution among the regions, considering the responsiveness of that distribution to these differences. Equalization is an alternative to the movement of people. It can deter excessive movement. And the equalization system now in place in Canada is far from ideal, mainly because of flaws that exist in the treatment of resource revenues. While the equalization system goes some way towards promoting equity, it falls short of the ideal on both equity and efficiency grounds.

When CAP and other similar transfers are considered by themselves, they produce a modest equalization effect; and when a reasonable assumption is made about the personal distributional effects of benefits and contributions, the transfers have little effect on population distribution and, through that, on interregional productivity differentials in Canada. The OAS/GIS, family allowances, tax deductions for children, and child tax credit programs have redistributive effects among regions, but that is inadvertent; it merely reflects the differences in the proportions of older people and children in regional populations. Regions with high proportions of older people or children will be relatively large net beneficiaries of such programs.

When the UI system in its present form and job creation are considered apart from the transfers already noted, however, quite large net redistributional effects in favour of the poorer regions take place. This is so when regional benefits, as well as contributions and taxes, are taken into account. In many cases job creation inadvertently builds up UI entitlements, to which regionally extended benefits are attached.

When all these programs are considered together, there is a large net transfer to the Atlantic provinces and to Quebec. For the Atlantic provinces the net incomes received have increased relative to the national average over the last 20 years, though they are still lower than average. The case is fairly strong, too, in support of the contention that transfer payments have been the main factor in producing this result and that a larger proportion of the population has experienced a significantly improved standard of living than would otherwise have been possible in the poorer regions.

Adjustment Costs

Throughout Canadian history the federal and provincial governments have placed special emphasis on the development of a particular area or resource. Three areas that come to mind are transportation, electric power generation, and oil and gas reserves in western Canada and off the Newfoundland coast. In part, these developments strengthened the base upon which income growth depends, either nationally or regionally. More recently there has been discussion of the broader notion of an industrial strategy for Canada, which in its extreme form would use the full force of government tax and subsidy programs to nudge Canada closer to what some believe would be a stronger, more competitive and culturally independent nation, enjoying a real income growth greater than that afforded by any other alternative. Those who argue for this route usually regard the opposing point of view, which prefers a development strategy based on less market intervention and more market discipline, as also sympathetic to the idea of expanding trade relationships with other countries. This issue has already been discussed in detail, as has the need to speed adoption of new technology and methods. What remains is some consideration of the costs of adjustment.

More dependence on trading relationships, robotics, and the new information-based technology – all point to increased potential for income growth. Getting organized to take advantage of these opportunities is only part of the story. Such organization must be accompanied by a well-thought-out set of adjustment policies that reflect a full consideration of benefits and costs. Any strategy, no matter how successful, is likely to impose costs on some individuals. For example, the most technical and detailed analysis of the trade issue indicates that some plants would close. This, combined with the attenuated job loss, raises the question as to how such costs are to be minimized. In like manner the technical change issue carries with it the possible outcome of initial job loss. In the broadest context there are many alternative means by which this human cost can be distributed.

Canadians are likely to look for safety nets for displaced workers, to be provided within the context of government policy or at least funded by government. An effective safety net would contribute to easing the cost of adjustment by lessening the likelihood of worker resistance to technological change or trade rationalization. Such safety nets may have two broad aspects. One is income support. In this respect the safety net operates as a transfer or entitlement program. A second aspect is retraining, relocation, job creation – or, more generally, an employment strategy. In these respects the safety net improves and expands on the established base of human capital. Most current programs stress the former rather than the latter objective. Some might regard this as unfortunate because income support programs, as we have seen in the regional context, may tend to impede economic adjustment. The Economic Council and others have found that programs such as equalization and UI support hinder to some extent regional redeployment and the movement of human resources. The real issue, however, is whether Canadians prefer income through transfer programs or through employment. We also think that the focus of adjustment assistance could be shifted periodically, as circumstances require, from income support to retraining, relocation, job creation, or other employment programs. Such a periodic shift might make a bigger contribution to raising growth in real income.

The Mix of Monetary and Fiscal Policy

In both Canada and the United States, the need for a change in the mix of monetary and fiscal policy has recently been emphasized. Some, including the Governor of the Bank of Canada, take the position that fiscal policy in many large industrial countries has been too loose (with tax rates too low and spending levels too high), bringing less flexibility to matters of monetary policy. The Governor, commenting recently on the way in which inflation was eventually fought in industrial countries, stated: "Far too much reliance was placed on monetary policy and high interest rates and there was insufficient fiscal restraint."

In the United States there are those who argue that this mix of easy fiscal policy and tight monetary policy was intentional, that it was part of a larger design put in place to attract the capital needed to finance the government of trade deficits. There are now some signs that a deficit reduction package will pass into law in that country. The analysis of Chapter 5 has indicated that, given the degree of financial integration of the two economies, easier money in the United States would not only give the Bank of Canada more flexibility in monetary matters but would, in the medium run, make a shift in the policy mix in Canada much easier to undertake. Changes in the monetary/fiscal mix and in confidence, plus the advantages of an expanding North American market, could be a powerful tonic for the Canadian economy.

Some Canadian economists have suggested that the macroeconomic policy setting in Canada might be improved by a temporary reduction in interest rates in Canada without a further tightening of fiscal policy. In short, what they suggest is a one-shot increase in the level of the money supply. Operationally such a policy might reduce the Canada/U.S. short-term interest rate differential by about 100 to 150 basis points for the period covering the next 12 to 15 months. The reduction in rates would be one-shot because one cannot predict accurately the course of short-term interest rates in the United States. If and when U.S. rates decline, there would be less need to follow such a policy in Canada.

Those who emphasize the need for such a policy argue that, in light of historical experience and in relation to fundamental long-run determinants such as TFP growth, nominal and real interest rates are currently too high both in the United States and on world financial markets. This has been particularly true at the short-term rates, although there has been some recent improvement. Maintaining a differential between the United States and Canada makes the level of current rates all the more excessive. In an economy such as Canada's, which has many capital-intensive sectors, in which the interest-sensitivity of investment may matter, and in which investment performance is poor, it would be desirable to reduce real interest rates so as to remove or lessen any negative influence that high rates could have on investment. The same holds true for consumption (especially of durable goods) and housing. And, needless to say, lower interest rates would ease the cost of servicing the federal debt.

The way in which such a temporary, one-shot reduction in short-term interest rates would influence the Canadian economy may seem straightforward, but it could nevertheless involve some complications. This temporary change would reduce the net inflow of short-term capital to Canada by increasing capital outflows or reducing capital inflows. It would put upward pressure on the Canadian-dollar price of the U.S. dollar in the market for foreign exchange. A devalued Canadian dollar vis-à-vis the U.S. dollar would be a permanent result, even though the interest rate reduction was temporary. The extent to which the change in the value of the Canadian dollar relative to the U.S. dollar translates into higher prices for imported goods to Canadians or lower prices for Canadian goods to foreigners depends on the extent to which importers and/or exporters absorb these changes in profit margins. And the channel through which such a policy would be intended to work would be the impact that these price changes would have on the real exchange rate and thus on net exports. Although lower domestic interest rates would not be intended to be a permanent feature of this policy, while they lasted they might stimulate investment and consumption expenditures to some degree and thus, temporarily, output and employment.

However, the permanent impact on output and employment stemming from the real-exchange-rate effect is the central reason for reducing the Canada-U.S. rate differential temporarily. In the end the success of this policy in raising the level of output and employment permanently will depend on the strength of this net export effect, compared with the possible weakness in domestic demand resulting from any fall in real income, since the effect on income could cut two ways. Real incomes would be higher because of the previously mentioned temporary effects on output and employment and of the permanent effect of an improved net export position, but there would be other pressures in the opposite direction because of the pass-through effect of the devalued dollar on real earnings. The quicker the gain in net exports, the more successful the policy. The usual assumption made by those who advocate this policy is that the gain in net exports will quickly emerge, that it will be large, and that the real income loss will be small, leading to a permanent increase in output and employment.

What are the risks and benefits of such a temporary reduction in interest rates? The answer depends not only on the workings of domestic markets and of the market for foreign exchange but also on less certain circumstances, reactions, attitudes, and attendant behaviour. For example, is Canada now so far along and so entrenched in the deceleration of inflation expectations that such action would produce increases in real income rather than a reacceleration of inflation? We remain cautious on this point. For more than a decade, Canada experienced worse inflation performance than the United States. Those high real interest rates may just be an indication that financial markets expect higher growth in money supply and all of the related effects, including a reacceleration of inflation. If this is the case, any gain in net exports may be dissipated by a loss in real income and by the attendant fall in domestic demand. Furthermore, the impact on net exports of a lower Canadian dollar also depends on the price-elasticity of imports, and the range of estimates for such elasticities is large.

In light of the analysis of Chapter 6, one must ask whether high interest rates are a dominant force weakening investment and consumption in Canada. As we indicated in that chapter, there are many other factors, including the domestic tax regime. Furthermore, the current U.S. experience of high investment performance in the context of high nominal and real interest rates suggests that the interest-elasticity of investment may be overrated. In any event, these gains would only be temporary.

Worse still, might not monetary expansion without any attendant steps towards fiscal tightening be taken as a clear signal that Canada is prepared to monetize part of the federal debt, as capital-market sceptics have so often suggested? What could result is an international run from Canadian securities, however irrational that might be, or at least the appearance of an additional risk premium for Canadian securities in foreign capital markets. In such circumstances, there is no telling where the depreciation of the Canadian dollar would end. Why should capital markets trust Canada's claim that, having done the deed once, it would not do it again? Would other governments regard devaluation of the Canadian dollar as a beggar-thy-neighbour act, even though the devaluation would reflect some help-thy-neighbour changes in capital movements and increased Canadian imports (and thus increased foreign exports)? But even so, we cannot rule out the possibility that foreign governments might be caught up in the symbolism of a Canadian devaluation. On balance it seems to us that a temporary reduction in rates along the lines suggested – i.e., by an expansion of the money supply – is more likely to produce small benefits and large risks than the reverse.

What other options do Canadians have to improve their chances that the actual outcome over the next five years will be closer to our proposed targets? As set out in the preceding chapters, there are many intricate issues that require attention during this period. In addition to a detailed examination of these issues, we offer some illustrative examples using CANDIDE Model 3.0. In policy discussions three topics usually head the list for debate: securing and/or expanding the gains from trade, the fiscal/monetary mix, and the federal deficit. The question that we wish to examine is simply put. Should the general direction of policy favour trade expansion within the GATT framework or otherwise, a change in the mix of monetary and fiscal policy (preferably towards looser monetary policy and tighter fiscal policy), and greater deficit reduction activity than was included in the federal government's May 1985 Budget? It is worth noting that this package includes, as one of its elements, the proposal of the previous discussion in modified form.

Is this emphasis consistent? Certainly trade expansion would strengthen both the corporate and personal tax base. Lower interest rates would put downward pressure on the Canadian dollar because of the degree of financial integration between the United States and Canada, but the expanding export trade would push the dollar in the opposite direction. And tighter fiscal policy would fit well with deficit reduction, especially if it could be accomplished with the help of a larger tax base, fostered by more trade and stronger domestic demand, and supported by lower interest rates. Thus, on the surface the emphasis contained in the above package is consistent. But what evidence is there that a policy move in this general direction would also result in movement towards our targets?

For example, what would be the net effect of gradually expanding exports to $2.5 billion (1971

Table 7-1

Selected Indicators of Illustrative Scenarios, Canada, 1985-90

	1985	1986	1987	1988	1989	1990	Average 1985-90
				(Per cent)			
Change in:							
Real GNP							
Base case	3.8	3.5	4.0	3.8	3.4	2.8	3.5
Policy package	3.8	4.0	4.7	4.4	3.9	3.5	4.1
Oil price shock	3.1	3.1	4.0	1.8	1.4	2.7	2.7
Consumer price index							
Base case	4.0	3.7	4.0	3.7	3.9	4.3	3.9
Policy package	4.0	3.7	3.8	3.7	4.2	4.8	4.0
Oil price shock	4.2	4.2	4.5	8.7	7.5	6.1	5.9
International oil price ($US)[1]							
Base case	-5.2	-1.0	-	5.0	5.0	6.0	1.6
Policy package	-5.2	-1.0	-	5.5	5.5	5.5	1.7
Oil price shock	-5.2	-1.0	-	53.8	-8.8	-9.6	4.9
Level of:							
Unemployment rate							
Base case	10.6	10.1	9.2	8.7	8.2	8.1	9.2
Policy package	10.6	10.0	8.9	8.0	7.3	6.9	8.6
Oil price shock	10.8	10.6	9.8	9.8	8.5	9.5	9.8
Short-term interest rate							
Base case	10.0	8.5	8.5	10.1	10.2	10.7	9.7
Policy package	10.0	7.3	7.3	9.0	9.3	9.7	8.8
Oil price shock	10.5	9.1	9.1	13.4	15.4	13.9	11.9
As a proportion of GNP:							
Federal government surplus or deficit (-)							
Base case	-6.4	-5.1	-4.7	-4.3	-4.1	-4.0	-4.8
Policy package	-6.4	-4.9	-4.1	-3.5	-3.0	-2.7	-4.1
Oil price shock	-6.5	-5.4	-5.0	-4.9	-5.0	-5.3	-5.4
Exports of goods and services							
Base case	33.6	33.1	33.0	33.3	33.7	33.5	33.4
Policy package	33.6	33.6	33.9	34.4	34.8	34.6	34.2
Oil price shock	33.5	32.9	32.7	32.6	32.3	31.1	32.5
As a proportion of world goods trade:							
Merchandise exports							
Base case	4.94	4.94	4.77	4.53	4.26	4.12	4.59
Policy package	4.94	5.03	4.93	4.65	4.46	4.32	4.72
Oil price shock	4.92	4.91	4.74	4.54	4.27	4.07	4.58

[1] Taken from the U.S. scenario, used as input.

SOURCE Economic Council of Canada, CANDIDE Model 3.0, July 1985.

dollars) above our base case values by 1990, of deliberately reducing the Canadian short-term interest rate by 1 percentage point from its base case value, and – because these measures would enlarge the economic pie – of extending to 1990 the surcharge contained in the May 1985 Budget on personal income, which is scheduled to expire in late 1987? Of these three elements, the most difficult to accept without some discussion is the trade expansion component. We emphasize, however, that we are only attempting to illustrate the impact on general economic indicators that might result from a general change in policy direction. We realize the difficulties and uncertainties of making progress in this area.

The findings of our analysis, recorded in Table 7-1, indicate that progress can be expected in almost all areas if general economic policy moves in the direction indicated. Real growth would average above 4 per cent; by 1990 inflation would average about 4 per cent, the unemployment rate would decline to below 7 per cent, and the deficit would fall to below 3 per cent of GNP – about 1 percentage point lower than the base case figure. In isolation, each component might have unwanted side effects, but as a package the components compensate one another for their less desirable effects (some of which have already been illustrated in Chapter 5).

This outcome is encouraging. First, simultaneous progress in many areas is possible. Second, the illustrative policy regime is not one that is out of reach, although we do realize that the most difficult area remains the trade question. Of course, the base case upon which we imposed these changes is itself, as we have indicated, one of cautious optimism, but we have good reason to believe this is the best base upon which to plan. However, it would be foolish not to consider the opposite. Our pessimistic case of Chapter 2 contains many poor results, but it may be instructive to consider an even more pessimistic case – a "worst" case.

Many may feel that consideration of another oil price shock is not useful or plausible, given the state of world oil markets and the weakness of the OPEC cartel. But assessing the effects of an oil price shock in the late 1980s would help to illustrate the extent to which an open economy such as Canada's can absorb externally generated shocks. We illustrate this by imposing a 54 per cent increase in the world price of oil in 1988 on our pessimistic alternative described in Chapter 2. Is the Canadian economy any better equipped now to absorb an oil price shock than it was in the mid-70s? Our answer to this question is a simple No! Such a shock in 1988 would produce two very poor years of real growth (below 2 per cent); push inflation rates back to near double-digit levels; reverse the downward trend in the unemployment rate, returning it to near double-digit levels; bring on another bout of high interest rates; and erode any progress made in reducing the deficit prior to the shock. And these are only first-round effects. The consequences could be worse if new inflationary expectations were fueled or business confidence were seriously eroded, as was the case in the aftermath of the 1973 and 1979 oil price shocks. This simple case illustrates that there could be events that would deflect us from our current path with such force that any gains to date would be dissipated quickly.

Conclusions

We can draw three conclusions from these illustrative examples, conclusions that echo many of the arguments contained in this Review. First, it is possible to make progress in many areas simultaneously. Second, there is a policy package that would encourage that outcome. Third, there are events that could make progress very difficult. With this in mind, this is perhaps a good time to make as much progress as possible in strengthening the competitive structure of the economy and consequently its ability to withstand adverse external shocks of any origin. In short, many viable options remain to strengthen the growth process in Canada, and it appears that the constraints to growth are less now than they have been in the recent past.

We emphasize, however, that there is more to making things better in Canada than liberalizing trade, reducing the deficit, and changing the monetary/fiscal mix. This Review has dealt with many other issues, many of them technical and, thus, far removed from the everyday experience of individual Canadians. Even so, these issues are important and can influence the living standards of all Canadians. We are reminded of the teachings of the late great Canadian economist W. A. Mackintosh. In interpreting Canadian economic development, he argued that when many small forces of change begin to move in the same direction and reinforce one another, the cumulative result is more than likely to be large. We believe that many small forces of improvement are beginning to appear in the Canadian economy, that they are reinforcing one another, that the momentum of economic growth is building, and that the right policy improvements can add to this momentum. Business and household confidence is improving. The financial health of business is better. Investment has started to pick up. Education and skill development are a good deal more than minimally supported. Most Canadians see external market development as a necessary part of the main stream strategy for economic growth. But they also see that high productivity growth and a strong record of innovation over the whole range of economic activities in Canada are essential too. They are aware of the renewal of federal-provincial cooperation and of the hope that this brings for resolution of the difficult problems of development, financial regulation, social policy, and sharing. Admittedly, there are weak spots, and much remains to be done. All things considered, however, Canada appears to be in a position to achieve more sustained and more broadly based improvement in the growth in real income in the years ahead than it has experienced during the last decade.

Supplementary Views by Pierre Fortin

While I generally support the conclusions of the Council, I have to take exception with its view of the alleged risks of a less restrictive monetary policy aimed at bringing Canadian interest rates down in line with U.S. interest rates, so as to promote the (so far) incomplete recovery of jobs and investment.

I am in good company. In November 1984, together with nine other economists of various persuasions, I signed a public statement jointly issued by the C. D. Howe Institute and the Institute for Policy Analysis of the University of Toronto. This middle-of-the road document argued, in particular, that :

> Canada should now adopt a more desirable policy mix by tightening fiscal policy (reducing the deficit), accompanied by an offsetting easing of monetary policy. The contractionary effect of tighter fiscal policy could be offset by an easing of monetary policy that may lower the value of the Canadian dollar (thereby increasing exports) and temporarily reduce interest rates. Altering the policy mix in this way would not only serve to stabilize the ratio of debt to GNP but would also encourage investment and improve the economy's growth prospects. . . . Coordination of monetary and fiscal policy will be critical to the success of the deficit reduction strategy. In our view, a *quid pro quo* will be necessary : the Bank of Canada must be prepared to ease monetary policy in response to action by the federal government to bring down the structural deficit.

More recently, at their annual conference in St. John's last August, the ten provincial Premiers unanimously "noted the negative consequence for economic growth of maintaining an artificially high Canadian dollar through high interest rates." They added that "the dollar should be allowed to find its market level in response to economic forces."

Finally, in September, the Royal Commission on the Economic Union and Development Prospects for Canada similarly recommended that :

> Under present circumstances of high unemployment a shift to a less expansionary fiscal stance, so as to reduce the deficit, should be more than matched by a temporary shift to a less restrictive monetary stance. [Volume 2, page 389]

There are two sound reasons for supporting the economists' statement, the Premiers' communiqué, and the Royal Commission's recommendation.

First, unemployment is rightly perceived by two Canadians out of three as being the country's foremost economic issue. At 10.5 per cent, our unemployment rate is still 3.5 percentage points higher than the U.S. unemployment rate after three years of recovery. There is no precedent for Canada lagging so much behind her neighbour since the Second World War. The sharply depressed level of investment is, of course, one consequence of operating our economy so far below full capacity. This is a national disgrace, and we ought to take any reasonable initiative to correct the situation now instead of waiting for the next decade to do so.

The second reason for supporting the ten economists and the ten Premiers is that the government's strategy for controlling its fiscal deficit needs the protection of a less restrictive monetary policy. The current economic environment is not conducive to lower unemployment over the next two years. That is because the U.S. recovery is naturally losing much of its steam after three years and because the government's May 1985 Budget, while promoting growth over a five-year horizon, will nevertheless have a negative impact on jobs in the short run. But continuous public support for the government's fiscal policy will obtain only if the unemployment rate declines appreciably over the next two years in spite of the U.S. growth slowdown and in spite of the budget cuts and higher taxes. It is presumptuous to believe that a decline in the unemployment rate will materialize without an offsetting easing of monetary policy.

The proposed easing could take the form of a decrease of 1 to 1.5 percentage points in Canadian short-term rates *relative* to U.S. rates. That would bring our interest rates roughly in line with U.S. rates.

The Council fears that the related one-shot expansion in the money supply might rekindle inflation and that the lower interest rates and lower Canadian dollar might even fail to expand production, jobs, and real incomes. I am aware of no Canadian empirical evidence whatsoever that indicates that either danger is real. There is no historical precedent for Canadian inflation accelerating when the national unemployment rate is in the two-digit range. Moreover, all macroeconomic models of the Canadian economy report that lower interest rates and a lower value of the currency have been expansionary in the past.

Should we be concerned that the United States might interpret a depreciation of the Canadian dollar as a "beggar-thy-neighbour" policy? My own answer to this is a resounding No! Thanks to its huge fiscal deficits, the United States is largely responsible for the high level of world real interest rates and for the gross overvaluation of its currency vis-à-vis the rest of the world. It is only sound economics for Canada to reject this dangerous course by bringing its own fiscal deficit under control and refusing to follow the United States any longer on the path of currency overvaluation. It is sound policy for a sovereign nation to take a different course from its neighbour when it has major and sound reasons to believe it should. In this instance, fiscal deficits and currency overvaluation are not particularly commendable options for Canada.

There is also some apprehension that the depreciation brought about by a less restrictive monetary policy would make the exchange market nervous in the short run and that the Bank of Canada would have to work harder than usual to stabilize expectations. That might be true for a little while, but the Bank has had a long experience in this business. The government must make a choice about who is going to be nervous: exchange market participants, or the 1.2 million unemployed Canadians who are waiting for a job. Given the strong, long-time commitment of the Bank of Canada to the goals of high employment and fiscal discipline – in a non-inflationary environment – I am sure that our central bank would welcome this opportunity to "work harder." But it must first get the message from the government.

Appendix Tables

A Appendix to Chapter 2
B Appendix to Chapter 3
C Appendix to Chapter 4
D Appendix to Chapter 6

Table A-1

Level, Change, and Contribution to Growth of Selected Economic Indicators, Canada, 1981 and 1984

	1981	1984	Change 1981/84	Contribution to overall growth[1]
Final demand	(Millions of 1971 $)		(Per cent)	(Percentage points)
Consumer expenditure	82,807	86,790	4.8	2.9
Durables	14,428	16,399	13.7	1.4
Semidurables	11,394	11,583	1.7	0.2
Nondurables	22,733	23,001	1.2	0.2
Services	34,252	35,807	4.5	1.1
Government current expenditure on goods and services	23,428	24,364	4.0	0.7
Capital formation	28,641	23,669	-17.4	-3.3
Residential investment	5,736	5,441	-5.1	-0.2
Nonresidential investment	10,979	8,427	-23.2	-1.2
Machinery and equipment	11,926	9,801	-17.8	-1.4
Exports	33,719	42,190	25.1	7.0
Imports	37,344	40,997	9.8	2.8
GNP	136,108	141,097	3.7	. . .
Employment	(Thousands)			
Manufacturing	2,122	1,968	-7.3	-1.4
Construction	651	571	-12.3	-0.7
Agriculture	484	476	-1.7	-0.1
Other primary industries	323	292	-9.6	-0.3
Services	7,426	7,691	3.6	2.5
Total employment	11,006	10,998	-0.1	. . .
Output	(Millions of 1971 $)			
Manufacturing	26,068	26,561	1.9	0.4
Construction	7,460	6,341	-15.0	-0.8
Agriculture	3,379	3,442	1.9	—
Other primary industries	4,043	4,318	6.8	0.2
Services	80,115	84,087	5.0	3.3
Total RDP	121,065	124,749	3.0	. . .

[1] Figures may not add up because of rounding and because of changes in the weights. In the case of GNP, the contribution of inventory change (not reported) also adds to this discrepancy.

SOURCE Based on data from Statistics Canada.

Table A-2

Change and Contribution to Growth of Selected Economic Indicators, Canada, Five Recovery Periods (Trough to Peak)

	Average of previous four recoveries[1]		Current recovery[2]	
	Change	Contribution to overall growth[3]	Change	Contribution to overall growth[3]
	(Per cent)	(Percentage points)	(Per cent)	(Percentage points)
Final demand (1971 $)				
Consumer expenditure	16.9	10.2	4.8	2.9
Durables	33.9	2.8	13.7	1.4
Semidurables	15.6	1.3	1.7	0.2
Nondurables	13.1	2.6	1.2	0.2
Services	14.7	3.6	4.5	1.1
Government current expenditure on goods and services	10.3	1.9	4.0	0.7
Capital formation	20.0	4.6	-17.4	-3.3
Residential investment	22.4	1.1	-5.1	-0.2
Nonresidential investment and construction	22.7	1.8	-23.2	-1.2
Machinery and equipment	18.6	1.3	-17.8	-1.4
Exports	23.0	4.8	25.1	7.0
Imports	22.1	5.1	9.8	2.8
GNP	17.7	. . .	3.7	. . .
Employment				
Manufacturing	8.9	2.1	-7.3	-1.4
Construction	14.0	0.9	-12.3	-0.7
Agriculture	-7.0	-0.8	-1.7	-0.1
Other primary industries	3.7	0.1	-9.6	-0.3
Services	11.2	6.5	3.6	2.5
Total employment	8.5	. . .	-0.1	. . .
Output (1971 $)				
Manufacturing	19.9	4.5	1.9	0.4
Construction	16.5	1.3	-15.0	-0.8
Agriculture	10.4	0.5	1.9	—
Other primary industries	16.8	0.7	6.8	0.2
Services	16.0	9.9	5.0	3.3
Total RDP	16.7	. . .	3.0	. . .

[1] From the 1954, 1960, 1970, and 1975 recessions.

[2] 1984 figures are compared with 1981 data.

[3] Figures may not add up because of rounding and because of changes in the weights. In the case of GNP, the contribution of inventories (not reported) also adds to the discrepancy.

SOURCE Based on data from Statistics Canada.

Table A-3

External Environment Assumptions, Base Case Projection, 1985-95

							Average	
	1985	1986	1987	1988	1989	1990	1985-90	1991-95
				(Percentage change)				
Industrial production								
OECD area	3.3	2.8	3.4	5.2	4.0	0.7	3.3	4.1
Selected OECD countries[1]	5.9	3.2	3.5	5.9	5.1	4.4	4.7	4.6
International price (Can $) of crude petroleum (f.o.b.)	-3.3	–	–	4.1	4.6	4.9	1.7	4.6
United States								
Real GNP	2.6	2.6	3.2	3.5	3.1	0.4	2.6	3.2
Industrial production	2.1	2.6	3.1	4.9	3.5	-1.3	2.5	3.9
Consumer price index	3.6	4.1	4.6	5.5	5.2	4.6	4.6	4.5
				(Per cent)				
Unemployment rate	7.4	7.6	7.4	6.9	6.7	7.6	7.3	6.2
Short-term interest rate[2]	7.5	6.4	7.1	8.0	8.8	9.7	7.9	7.7

[1] France, Italy, West Germany, the United Kingdom, and Japan.

[2] Short-term (three-month) prime commercial paper rate.

SOURCE Economic Council of Canada, CANDIDE Model 3.0, July 1985.

Table A-4

Components of the Domestic Crude Oil Price to Consumers, Base Case Projection, Canada, 1985-95

							Average	
	1985	1986	1987	1988	1989	1990	1985-90	1991-95
				($/bbl)				
Domestic price at Toronto	35.33	38.23	39.02	40.53	42.29	44.24	39.94	50.43
Canadian ownership charge	0.48	–	–	–	–	–	. .	. .
May 1985 federal excise tax[1]	0.43	1.83	2.56	2.56	2.56	2.56	2.08	2.56
Transportation charge	1.80	1.83	1.87	1.91	1.94	1.98	1.89	2.11
Wellhead price for conventional old oil[2]	32.81	35.02	35.04	36.49	38.19	40.08	36.27	46.05
International price at Montreal	36.80	36.85	36.91	38.40	40.14	42.06	38.53	48.16
				(Ratio)				
Domestic wellhead price/ international price	0.94	. .	. .	. .	. .	. .	. .	. .

[1] Because of the partial coverage of this tax, which is limited to transportation fuels, the net result included in our calculation is less than that indicated by the amount of the tax increment.

[2] As per the June 1983 amendment to the agreement between the federal government and Alberta until 1 June 1985; the pricing elements of the Western Accord take effect from that date.

SOURCE Economic Council of Canada, CANDIDE Model 3.0, July 1985.

Table A-5

Dynamics of Inflation, 1960-95

	1960-73	1974-84	1985-90	1991-95
		(Percentage change)		
Consumer price index	3.1	9.0	3.9	3.4
GNP deflator	3.5	9.1	3.7	3.2
Inflation expectations	3.3	9.3	4.5	4.2
Unit labour costs	4.0	9.4	4.4	4.0
Nominal wage rate	7.4	10.5	6.2	6.5
Productivity	3.4	1.1	1.8	2.5
Import prices (in U.S. $)	2.3	7.7	3.7	3.5
Exchange rate (Can $/U.S. $)	0.3	2.4	0.7	-0.6
Indirect tax rate	0.5	-0.1	-0.5	-0.7
		(Percentage points)		
Money supply growth, (in excess of real GNP growth)	2.2	4.7	3.6	3.5
		(Per cent)		
Unemployment rate	5.4	8.4	9.2	7.6

SOURCE Economic Council of Canada, CANDIDE Model 3.0, July 1985.

Table A-6

Alternative Scenarios for Selected Indicators, Canada, 1985-95

	1985	1986	1987	1988	1989	1990	Average 1985-90	Average 1991-95
					(Per cent)			
Change in GNP (1971 $)								
Base case	3.8	3.5	4.0	3.8	3.4	2.8	3.5	3.5
U.S. high growth	3.9	4.0	4.4	4.2	3.8	3.2	3.9	3.1
U.S. low growth	3.8	2.4	3.7	3.4	2.5	2.6	3.1	4.0
High investment	4.5	3.6	3.8	4.4	3.3	2.8	3.7	3.2
Low investment	3.1	3.3	4.1	3.2	3.4	2.9	3.3	3.9
Low inflationary expectations	3.9	3.7	4.2	4.0	3.6	3.1	3.8	3.7
High inflationary expectations	3.6	3.3	3.8	3.6	3.1	2.6	3.3	3.3
Change in consumer price index								
Base case	4.0	3.7	4.0	3.7	3.9	4.3	3.9	3.4
U.S. high growth	3.9	3.7	4.0	3.8	4.2	5.1	4.1	5.8
U.S. low growth	4.0	4.0	4.1	3.6	3.9	3.5	3.9	0.9
High investment	4.0	3.9	4.2	3.9	4.6	5.3	4.3	5.0
Low investment	3.9	3.6	3.7	3.5	3.3	3.4	3.6	1.7
Low inflationary expectations	3.6	3.2	3.2	2.8	2.9	3.3	3.2	2.6
High inflationary expectations	4.3	4.3	4.7	4.6	4.9	5.4	4.7	4.7
Unemployment rate (as a proportion of the labour force)								
Base case	10.6	10.1	9.2	8.7	8.2	8.1	9.2	7.6
U.S. high growth	10.6	9.9	8.9	8.1	7.5	7.1	8.7	6.4
U.S. low growth	10.6	10.3	9.6	9.2	9.0	9.3	9.7	9.2
High investment	10.4	9.7	8.9	8.2	7.6	7.4	8.7	7.0
Low investment	10.8	10.5	9.6	9.2	8.9	8.9	9.7	8.2
Low inflationary expectations	10.6	10.0	9.0	8.3	7.7	7.4	8.8	6.3
High inflationary expectations	10.6	10.2	9.5	9.0	8.7	8.8	9.5	8.7
Federal governement balance (as a proportion of GNP)								
Base case	–6.4	–5.1	–4.7	–4.3	–4.1	–4.0	–4.8	-2.4
U.S. high growth	–6.4	–4.9	–4.3	–3.8	–3.3	–3.0	–4.3	–1.5
U.S. low growth	–6.6	–5.3	–5.3	–5.1	–5.3	–5.3	–5.5	–3.5
High investment	–6.2	–4.8	–4.4	–4.0	–3.7	–3.6	–4.5	–2.1
Low investment	–6.5	–5.4	–4.9	–4.6	–4.6	–4.5	–5.1	–2.6
Low inflationary expectations	–6.3	–5.0	–4.5	–4.0	–3.8	–3.6	–4.5	–2.1
High inflationary expectations	–6.4	–5.2	–4.8	–4.6	–4.4	–4.4	–5.0	–2.7

SOURCE Economic Council of Canada, CANDIDE Model 3.0, July 1985.

Table A-7

Components of Investment as a Proportion of GNP, Canada, 1960-95

	1960-73	1974-84	1985-90	1991-95
	(Per cent)			
Energy investment				
Construction	2.6	3.3	3.3	3.5
Machinery and equipment	0.7	1.3	1.1	1.0
Total	3.3	4.5	4.4	4.5
Nonenergy investment				
Construction	4.0	3.6	3.3	3.6
Machinery and equipment	5.9	6.7	5.9	5.9
Total	9.9	10.3	9.2	9.5
Residential construction	4.8	4.6	3.9	3.6
Government investment	4.1	3.1	2.9	2.9
Total investment	22.2	22.5	20.4	20.6

SOURCE Economic Council of Canada, CANDIDE Model 3.0, July 1985.

Table A-8

Federal Government Revenue, Expenditure, and Deficit or Surplus as Proportions of GNP, Canada, 1960-95

	1960-73	1974-84	1985-90	1991-95
	(Per cent)			
Revenue				
Direct taxes, persons	7.1	8.7	9.4	10.8
Direct taxes, corporations	3.0	2.8	2.6	2.1
Indirect taxes	5.3	4.6	3.9	3.8
Investment income	1.2	1.6	2.0	2.1
Total revenue	16.9	17.9	18.2	19.0
Expenditure				
Current expenditure on goods and services	5.5	5.0	4.7	4.4
Transfers to persons	4.8	6.2	6.3	5.5
Interest on public debt	2.0	3.3	5.6	5.7
Subsidies and capital assistance	0.8	1.8	1.4	1.0
Transfers to other levels of government	3.2	4.5	4.4	4.2
Total expenditure	16.6	21.2	22.8	21.2
Deficit (-) or surplus	—	-3.5	-4.8	-2.4
Deficit (-) or surplus, excluding interest payments	2.0	-0.2	0.9	3.4
Debt	34.3	26.5	45.7	48.8

SOURCE Economic Council of Canada, CANDIDE Model 3.0, July 1985.

Table A-9

Canadian Export Performance, 1960-95

	1960-73	1974-84	1985-90	1991-95
	(Per cent)[1]			
Average annual change in:				
Merchandise exports				
Agricultural industries	6.1	5.5	4.6	4.7
Mining industries	10.4	-3.0	5.3	3.6
Manufacturing industries	10.2	6.5	4.2	5.2
Durables	12.7	7.0	3.9	4.9
Machinery and equipment	12.2	9.9	13.6	10.0
Transport equipment	33.3	8.3	0.9	2.3
Nondurables	6.8	5.6	5.1	5.8
Paper and allied products	5.1	2.6	6.4	7.3
Total merchandise exports	9.1	5.1	4.4	5.1
Service exports				
Services, excluding income services	4.6	2.1	5.3	3.7
Total service exports	5.4	2.5	4.8	3.5
Total exports of goods and services	8.5	4.7	4.4	4.8

[1] Based on 1971 dollars.

SOURCE Economic Council of Canada, CANDIDE Model 3.0, July 1985.

Table A-10

Performance Range for Major Economic Indicators, Three Scenarios, Canada, 1985-95

	1985	1986	1987	1988	1989	1990	Average 1985-90	Average 1991-95
	(Per cent)							
Change in:								
GNP (1971 $)								
Base case	3.8	3.5	4.0	3.8	3.4	2.8	3.5	3.5
Pessimistic	2.9	2.1	4.0	2.8	2.4	2.5	2.8	3.7
Optimistic	4.8	4.3	4.2	4.6	3.8	3.2	4.1	3.1
Consumer price index								
Base case	4.0	3.7	4.0	3.7	3.9	4.3	3.9	3.4
Pessimistic	4.3	4.4	4.7	4.5	4.9	4.5	4.6	2.8
Optimistic	3.6	3.3	3.5	3.0	3.5	4.4	3.5	4.5
Labour productivity (GNP per person-hour)								
Base case	1.0	1.7	1.7	2.2	2.2	1.9	1.8	2.5
Pessimistic	0.6	1.0	1.9	1.7	1.9	2.2	1.5	3.0
Optimistic	1.6	1.9	1.6	2.5	2.1	1.7	1.9	2.0
U.S. GNP (1972 $)								
Base case	2.6	2.6	3.2	3.5	3.1	0.4	2.6	3.2
Pessimistic	1.9	-0.6	3.4	2.3	2.0	--	1.5	2.0
Optimistic	3.5	4.4	3.4	4.1	3.6	0.9	3.3	3.8

Table A-10 (Concl'd.)

							Average	
	1985	1986	1987	1988	1989	1990	1985-90	1991-95
					(Per cent)			
Level of:								
Unemployment rate								
Base case	10.6	10.1	9.2	8.7	8.2	8.1	9.2	7.6
Pessimistic	10.9	10.8	10.1	9.7	9.7	10.0	10.2	10.1
Optimistic ,	10.3	9.4	8.4	7.5	6.8	6.4	8.1	5.7
Personal saving rate								
Base case	12.9	12.1	11.7	11.7	11.0	10.7	11.7	9.2
Pessimistic	13.4	12.5	13.1	13.0	13.3	13.4	13.1	12.3
Optimistic	12.5	11.2	10.8	10.6	9.4	8.9	10.6	8.0
Industrial bond yield								
Base case	12.0	11.3	11.1	11.3	11.5	12.0	11.6	10.2
Pessimistic	12.6	12.3	12.8	13.1	13.6	14.0	13.1	11.3
Optimistic	12.0	10.9	10.2	10.0	10.1	10.5	10.6	9.1
Share of GNP:								
Real investment								
Base case	19.5	19.9	20.1	20.6	20.9	21.2	20.4	20.6
Pessimistic	19.0	19.5	19.7	19.9	20.2	20.3	19.8	19.7
Optimistic	20.0	20.3	20.5	21.4	21.5	22.1	20.9	21.6
Federal deficit								
Base case	-6.4	-5.1	-4.7	-4.3	-4.1	-4.0	-4.8	-2.4
Pessimistic	-6.8	-5.7	-5.7	-5.5	-5.8	-5.9	-5.9	-3.9
Optimistic	-6.2	-4.5	-3.9	-3.4	-2.9	-2.6	-3.9	-1.3
Federal debt stock								
Base case	41.3	43.8	45.4	46.7	47.9	49.0	45.7	48.4
Pessimistic	41.8	45.0	47.3	49.7	52.2	54.8	48.5	57.8
Optimistic	40.9	42.8	43.9	44.3	44.4	44.2	43.4	40.8

SOURCE Economic Council of Canada, CANDIDE Model 3.0, July 1985.

Table B-1

Components of Price Change, Canada, 1958-73 and 1974-82

	1958-73			1974-82		
	Average annual change	Contribution to price change		Average annual change	Contribution to price change	
	(Per cent)	(Percentage points)	(Per cent)	(Per cent)	(Percentage points)	(Per cent)
Implicit GNP price deflator	3.26	3.26	100.0	10.20	10.20	100.0
Unit indirect business taxes less subsidies	3.96	0.50	15.3	8.45	0.93	9.1
Unit factor costs[1]	3.16	2.76	84.7	10.42	9.27	90.9
Average factor prices[2]	5.52	4.82	147.9	10.18	9.05	88.7
Total factor productivity	2.37	-2.06	-63.2	-0.25	0.22	2.2

[1] Total input costs per unit of output.

[2] Weighted sum of the input prices (capital and labour).

SOURCE Estimates by the Economic Council of Canada, based on data from Statistics Canada.

Table B-2

Growth in Output, Input, and Productivity, Canada, 1958-82

	Output growth[1]	Input growth[2]	TFP growth[3]	Contribution of capital/labour ratio[4]	Labour productivity growth[5]
	(Per cent)			(Percentage points)	(Per cent)
1958	2.31	0.81	1.50	2.26	3.76
1959	3.80	3.09	0.71	0.70	1.41
1960	2.89	1.85	1.04	1.03	2.07
1961	2.84	1.56	1.28	1.00	2.28
1962	6.82	2.75	4.07	0.43	4.50
1963	5.15	2.30	2.85	0.74	3.59
1964	6.70	3.48	3.22	0.84	4.06
1965	6.66	4.17	2.49	0.85	3.34
1966	6.95	4.17	2.78	1.43	4.21
1967	3.34	3.43	-0.09	1.05	0.96
1968	5.84	1.09	4.75	1.50	6.25
1969	5.33	3.22	2.10	0.64	2.74
1970	2.51	1.28	1.23	1.31	2.54
1971	6.86	2.50	4.36	0.85	5.21
1972	6.14	3.15	2.98	0.56	3.54
1973	7.55	4.91	2.64	0.32	2.96
1974	3.59	4.14	-0.56	0.78	0.22
1975	1.19	2.34	-1.15	1.43	0.28
1976	5.85	2.28	3.56	1.13	4.69
1977	1.99	1.69	0.30	1.01	1.31
1978	3.57	4.10	-0.53	0.09	-0.44
1979	3.18	3.61	-0.43	0.67	0.24
1980	1.01	2.89	-1.88	1.23	-0.65
1981	3.37	3.27	0.10	1.07	1.17
1982	-4.44	-2.79	-1.65	2.02	0.37

[1] Average annual growth rate in GNP (1971 dollars).

[2] Weighted sum of the growth rates of capital and labour.

[3] Output growth minus input growth.

[4] Growth in the capital/labour ratio multiplied by the share of capital in national income.

[5] The sum of TFP growth and the contribution of the capital/labour ratio.

SOURCE P. S. Rao and R. S. Preston, "Inter-factor substitution and total factor productivity growth: Evidence from Canadian industries," Discussion Paper 242, Economic Council of Canada, Ottawa, October 1983, updated by the authors.

Table B-3

Growth in Labour Productivity, by Sector, Canada, 1958-66 to 1974-82

	Contribution to aggregate TFP growth[1]		
	1958-66	1967-73	1974-82
	(Percentage points)		
Agriculture, fishing, and trapping	0.10	-0.05	-0.03
Forestry	0.07	0.02	-0.01
Mining	-	0.09	-0.25
Construction	0.11	0.08	-0.03
Manufacturing - durables	0.28	0.40	-0.04
Manufacturing - nondurables	0.24	0.27	-0.07
Transportation, storage, and communication	0.28	0.38	0.16
Finance, insurance, and real estate	-0.35	-0.02	-0.18
Trade	0.24	0.38	0.04
Other services	0.05	0.15	-0.09
Utilities	0.08	0.04	-
	(Per cent)		
Growth in:			
Sectoral TFP[2]	1.10	1.74	-0.50
Interindustry shifts[3]	1.12	0.83	0.25
Aggregate TFP	2.22	2.57	-0.25
Capital/labour ratio	1.03	0.89	1.05
Aggregate labour productivity	3.25	3.46	0.80

[1] TFP growth of each industry multiplied by its weight (ratio of gross output to GNP).

[2] The sum of the contributions of all the sectors.

[3] Difference between the aggregate TFP growth and the weighted sum of the sectoral TFP growth rates.

SOURCE Rao and Preston, "Inter-factor substitution."

Table B-4

Growth in Output, Input, and Productivity in Nonmanufacturing Industries, Canada, 1958-66 to 1974-82

	Output growth[1]			Input growth[2]			TFP growth[3]			Contribution of nonlabour inputs[4] to labour productivity growth			Labour productivity growth[5]		
	1958-66	1967-73	1974-82	1958-66	1967-73	1974-82	1958-66	1967-73	1974-82	1958-66	1967-73	1974-82	1958-66	1967-73	1974-82
	(Per cent)									(Percentage points)			(Per cent)		
Agriculture, fishing, and trapping	4.56	1.14	2.75	2.98	1.96	3.30	1.58	-0.82	-0.55	7.28	4.49	4.13	8.85	3.67	3.58
Forestry	4.75	10.68	-1.01	-0.02	9.17	-0.60	4.77	1.51	-0.40	3.70	9.66	0.29	8.47	11.17	-0.11
Mining	5.10	7.97	-1.47	5.05	6.53	3.14	0.06	1.43	-4.61	2.07	6.53	-0.14	2.13	8.33	-4.75
Construction	3.90	3.05	1.01	3.13	2.40	1.22	0.76	0.65	-0.20	0.80	2.00	1.19	1.56	2.65	0.98
Transportation, storage, and communication	5.17	7.48	2.94	2.72	4.36	1.78	2.45	3.11	1.15	2.33	1.97	1.01	4.78	5.09	2.17
Finance, insurance, and real estate	4.12	7.37	4.56	7.35	7.56	5.91	-3.22	-0.19	-1.35	2.99	3.70	2.20	-0.23	3.50	0.85
Trade	5.10	6.88	2.01	3.46	4.24	1.74	1.64	2.65	0.27	1.33	1.91	0.38	2.92	4.56	0.65
Other services	5.98	5.63	3.45	5.63	4.75	3.99	0.35	0.89	-0.54	0.85	0.85	0.95	1.20	1.74	0.40
Utilities	8.14	9.56	4.39	5.01	8.39	4.28	3.14	1.17	0.12	3.67	5.28	2.73	6.81	6.46	2.85

[1] Average annual growth rate of gross output.

[2] Weighted sum of the growth rates of capital, labour, and intermediate inputs.

[3] Output growth minus input growth.

[4] Increase in the ratio of nonlabour inputs to labour, multiplied by the share of nonlabour inputs in gross output (current dollars).

[5] The sum of TFP growth and the contribution of nonlabour inputs.

SOURCE Rao and Preston, "Inter-factor substitution."

Table B-5

Age Profile of the Labour Force,[1] Canada, Selected Years, 1961-82

	1961	1966	1971	1976	1982
			(Per cent)		
Age group:					
15-19	9.7	9.9	9.8	11.2	9.5
20-24	12.1	13.8	15.5	15.6	15.5
25-34	23.1	21.2	22.9	26.0	28.0
35-44	22.7	22.3	20.1	18.6	20.6
45-54	18.3	18.5	18.0	16.7	15.2
55-64	10.8	11.3	11.4	10.0	9.6
65 and over	3.5	3.0	2.3	1.7	1.6
Total	100.0	100.0	100.0	100.0	100.0

[1] Persons aged 14 years and over in 1961, 15 years and over thereafter.

SOURCE Based on data from Statistics Canada.

Table B-6

Sex Profile of the Labour Force,[1] Canada, Selected Years, 1961-82

	1961	1966	1971	1976	1982
			(Per cent)		
Men	73.0	68.9	65.9	62.8	59.1
Women	27.0	31.1	34.1	37.2	40.9
Total	100.0	100.0	100.0	100.0	100.0

[1] Persons aged 14 years and over in 1961, 15 years and over thereafter.

SOURCE Based on data from Statistics Canada.

Table B-7

Schooling Profile of the Labour Force,[1] by Age Group and by Sex, Canada, Selected Years, 1960-76

	Men								Women									
	15–24		25–44		45 and over		All age groups		15–24		25–44		45 and over		All age groups		Both sexes[1]	
	Years	Index	Years	Index	Years	Index	Years	Index	Years	Index	Years	Index	Years	Index	Years	Index	Years	Index
1960	9.2	100.0	8.9	100.0	8.2	100.0	8.5	100.0	10.5	100.0	10.3	100.0	9.4	100.0	10.2	100.0	9.0	100.0
1965	10.0	108.7	9.5	106.7	8.3	101.2	9.2	108.2	11.0	104.8	10.5	101.9	9.7	103.2	10.5	102.9	9.6	106.7
1970	10.7	116.3	10.4	116.9	9.0	109.8	10.1	118.8	11.6	110.5	11.2	108.7	10.3	109.6	11.2	109.8	10.5	116.7
1976	11.9	129.3	12.1	136.0	9.9	120.7	11.6	136.5	12.1	115.2	12.2	118.4	10.8	114.9	12.0	117.6	11.8	131.1

[1] Median years of schooling of persons aged 14 and over in 1960, 15 years and over thereafter.

SOURCE Estimates by the Economic Council of Canada, based on data from Statistics Canada.

Table B-8

Sources of Labour Quality Growth,[1] Canada, 1971-76

	(Per cent)
Overall labour quality growth	-0.24
Contributions of:	
Age	-0.36
Education	0.25
Region	-0.03
Sex	-0.36
Total one-way effects	-0.50
Total interactive effects	0.26

[1] Average annual estimates of the contributions of sex, age, education, and region to the growth in labour quality, based on census data for 1971 and 1976. Together, these factors reduced labour quality by 0.24 per cent a year over the period 1971-76. Education contributed positively, while the remaining factors contributed negatively.

SOURCE P. Chinloy, "Labour quality change in Canada," Discussion Paper 231, Economic Council of Canada, Ottawa, May 1983, Table 5-9.

Table B-9

Returns-to-Scale Parameter, by Sector, Canada, 1967-73 and 1974-79

	Returns-to-scale parameter	
	1967-73	1974-79
Manufacturing durables	0.93	0.91
Manufacturing nondurables	0.98	0.94
Energy-intensive manufacturing industries[1]		
Wood	0.67	0.66
Iron and steel	1.01	0.98
Nonferrous metals	0.88	0.81
Nonmetallic minerals	0.94	0.94
Food and beverages	1.58	1.64
Paper and allied products	1.05	0.99
Chemicals and chemical products	0.98	0.96
Agriculture	1.03	1.06
Forestry	1.03	0.86
Construction	1.04	0.93
Mining	1.22	0.91
Transportation, storage, and communication	1.86	1.94
Finance, insurance, and real estate	2.34	2.24
Trade	1.07	1.03
Utilities	3.57	2.00

[1] These industries are included in manufacturing durables and nondurables.

SOURCE Rao and Preston, "Inter-factor substitution."

Table B-10

Capacity Utilization Rates in the Manufacturing Sector, by Industry, Canada, 1967-83

	Average annual rates		
	1967-73	1974-80	1981-83
	(Per cent)		
Food and beverages	96.1	87.4	81.5
Tobacco products	87.4	85.8	80.3
Rubber and plastic products	88.3	81.2	74.0
Leather	88.1	77.6	72.8
Textiles	76.1	86.0	83.6
Knitting mills and clothing	82.4	89.1	89.2
Wood	85.0	74.2	63.3
Furniture and fixtures	86.5	75.3	69.2
Paper and allied products	88.0	84.6	76.8
Printing, publishing, and allied industries	79.1	89.2	91.5
Primary metals	86.8	75.6	63.3
Metal fabricating	87.0	82.2	66.8
Machinery	77.5	86.5	72.9
Transportation equipment	74.5	85.0	57.3
Electrical products	88.6	82.5	74.6
Nonmetallic mineral products	80.4	76.9	57.5
Petroleum and coal products	92.5	83.8	70.1
Chemicals and chemical products	88.7	79.6	63.0
Miscellaneous manufacturing	87.8	91.7	83.7

SOURCE Based on data from Statistics Canada.

Table B-11

Relative Plant Scale for 125 Industries in the Manufacturing Sector, Canada, 1970 and 1979

	Number of constituent four-digit industries[1]	Index of relative plant scale[2]	
Two-digit industries:		1970[3]	1979[3]
Food and beverages	17	0.526	0.573
Tobacco products	2	0.273	1.004
Rubber and plastics	0	–	–
Leather	4	0.757	0.857
Textiles	13	0.578	0.580
Knitting mills	2	0.416	0.314
Clothing	5	0.558	0.799
Wood	6	0.994	1.004
Furniture and fixtures	2	0.241	0.195
Paper and allied products	5	1.033	1.050
Printing and publishing	2	0.567	0.558
Primary metals	5	0.927	0.863
Metal fabricating	8	1.175	0.973
Machinery	3	1.255	0.472
Transportation equipment	8	0.541	0.773
Electrical products	8	0.597	0.415
Nonmetallic mineral products	11	0.965	1.324
Petroleum and coal products	2	1.389	0.977
Chemicals and chemical products	8	0.574	0.764
Miscellaneous manufacturing	14	0.360	0.448
All industries	125	0.691	0.736

[1] The total number of four-digit Canadian manufacturing industries is 167, but data on relative plant scale are available for only 125 of them.

[2] For each two-digit industry, relative plant scale consists of the unweighted average of the constituent four-digit industries. Relative plant scale is defined as the ratio of the mean size of larger plants in Canada to that of larger plants in the corresponding U.S. industry. "Larger" in this context refers to the average size of the smallest number of plants accounting for the top 50 per cent of industry employment.

[3] Only the Canadian data were drawn from 1970 and 1979 statistics. The U.S. data pertained to the census years 1972 to 1977 but were converted to a 1970 and 1979 basis, using the 1972 and 1977 exchange rates and then a Canadian gross output price index. Hence relative plant scale is likely to be biased downward in 1970 and upward in 1979.

SOURCE J. R. Baldwin and P. K. Gorecki, with J. McVey and J. Crysdale, "Trade, tariffs and relative plant scale in Canadian manufacturing industries, 1970-1979," Discussion Paper 232, Economic Council of Canada, Ottawa, May 1983.

Table B-12

Returns to Scale[1] in the Manufacturing Sector, Canada, 1970 and 1979

	Average return to scale for 1970 and 1979 (two-digit industries)[3]	Range of estimates of returns to scale for 1970 and 1979 (four-digit industries)[2]						
		Less than 0.9	0.9–1.0	1.0–1.1	1.1–1.2	1.2–1.3	1.3–1.4	Greater than 1.4
Food and beverages	1.27			3	8	2	1	2
Tobacco products[4]	1.31					1		1
Rubber and plastics	1.13				2			
Leather	1.10		1	3		1		
Textiles	1.11	1	3	6	2	1		1
Knitting mills	1.05		1	2				
Clothing	1.04		1	3	4			2
Wood	1.26			2	3	2		4
Furniture and fixtures	1.14			2	2	1		
Paper and allied products	1.22				3	2		1
Printing and publishing	1.20				1	2		
Primary metals	1.15		1	3	1	1	1	
Metal fabricating	1.14			2	7	2		
Machinery	1.06			1	2	1		
Transportation equipment	1.13		1	3	5	1		
Electrical products	1.13			7	1	1		
Nonmetallic mineral products	1.29	1	1	1	3	2	4	1
Petroleum and coal products	1.25						1	1
Chemicals and chemical products	1.24	1		3	3	3	1	
Miscellaneous manufacturing	1.06		3	4	5	2	1	1
All manufacturing industries	1.15	3	12	45	52	25	9	14

[1] The concept of returns to scale refers to the relationship between changes in inputs and the consequent change in output. If all inputs increase by x per cent and output increases by the same proportion, then there are constant returns to scale (1.0). If the output increases by a proportion greater than x per cent, then there are increasing returns to scale (> 1.0). If output increases by less than x per cent, then there are decreasing returns to scale (< 1.0).

[2] The industries for which economies of scale could not be estimated or which were clearly influenced by observation errors were eliminated when compiling these ranges. Plant data for 1970 and 1979 have been combined.

[3] Returns to scale were estimated for all plants in each two-digit industry for 1970 and 1979 separately; the mean of the two years is presented here.

[4] For this group, the estimates for 1970 and 1979 differed substantially.

SOURCE J. R. Baldwin and P. K. Gorecki, *The Role of Scale Economies in Canada/U.S. Productivity Differences in the Canadian Manufacturing Sector in the 1970s*, a report prepared for the Economic Council of Canada and the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, forthcoming).

Table B-13

Technical-Progress Parameter, by Sector, Canada, 1967-73 and 1974-79

	Average annual growth in technical-progress parameter	
	1967-73	1974-79
	(Per cent)	
Manufacturing durables	1.90	1.86
Manufacturing nondurables	1.08	0.81
Energy-intensive manufacturing industries[1]		
Wood	2.34	1.98
Iron and steel	1.21	0.84
Nonferrous metals	0.71	0.53
Nonmetallic minerals	1.44	1.28
Food and beverages	-0.68	-0.77
Paper and allied products	0.52	0.32
Chemicals and chemical products	1.42	1.03
Agriculture	0.74	0.74
Forestry	1.77	0.52
Construction	0.40	0.05
Mining	-2.24	-2.90
Transportation, storage, and communication	0.06	–
Finance, insurance, and real estate	-2.89	-3.74
Trade	2.37	1.96
Utilities	-1.70	-1.62

[1] These industries are included in manufacturing durables and nondurables.

SOURCE Rao and Preston, "Inter-factor substitution."

Table B-14

Bias in Technical Progress, by Sector, Canada

	Pattern of bias			
	Capital	Labour	Energy	Materials
Manufacturing durables	Saving*	Saving	Using*	Using*
Manufacturing nondurables	Saving*	Saving	Saving	Using*
Energy-intensive manufacturing industries[1]				
Wood	Saving*	Using	Using	Using*
Iron and steel	Saving*	Using*	Using*	Using*
Nonferrous metals	Saving*	Saving	Using*	Using*
Nonmetallic minerals	Saving*	Using	Using*	Using*
Food and beverages	Saving*	Using	Saving**	Using*
Paper and allied products	Saving**	Saving	Using**	Using
Chemicals and chemical products	Saving*	Using*	Using*	Using**
Agriculture	Saving**	Using	--	Using**
Forestry	Saving**	Saving	--	Using**
Construction	Saving	Saving	--	Using**
Mining	Using*	Saving*	--	Saving
Transportation, storage, and communication	Using**	Saving	--	Saving*
Finance, insurance, and real estate	Saving	Using*	--	Saving*
Trade	Saving*	Using*	--	Using
Utilities	Using**	Using*	--	Saving*

*Significant at the 99 per cent confidence level.

**Significant at the 90 per cent confidence level.

[1] These industries are included in manufacturing durables and nondurables.

SOURCE Rao and Preston, "Inter-factor substitution."

Table C-1

Factors Contributing to Growth in Real Income per Capita, Canada, 1951-83

	1951-66	1967-73	1974-83
	(Percentage points)		
Real income	2.80	4.10	0.94
Productivity	3.49	3.33	0.99
Participation rate	0.17	0.61	0.69
Employment rate	--	-0.29	-0.68
Reduction in dependency rate	-0.29	1.01	0.82
Average hours	-0.67	-0.81	-0.74
Relative prices	0.12	0.17	-0.08
National income relative to domestic output	0.01	0.05	-0.05

SOURCE Estimates by the Economic Council of Canada, based on methodology in J. F. Helliwell, M. E. MacGregor, and T. Padmore, "Economic growth and productivity in Canada, 1955-1990," Discussion Paper, Department of Economics, University of British Columbia, Vancouver, 1984.

Table C-2

Change in Average Annual Growth Rates of Selected Economic Indicators, Nine OECD Countries, 1960-73/1974-79

	GDP per capita	Business sector[1]					
		GDP	Labour	Capital	Labour productivity	Factor productivity	Factor substitution
				(Per cent)			
Japan	-6.1	-6.6	-0.5	-4.5	-6.1	-4.8	1.3
Sweden	-2.0	-4.1	-0.8	-0.7	-3.3	-3.3	–
Belgium	-2.3	-3.2	-1.5	-1.7	-1.7	-1.6	0.1
Italy	-2.5	-3.0	3.2	-0.9	-6.2	-5.0	1.2
France	-1.8	-2.6	-0.9	-0.8	-1.7	-1.8	-0.1
Canada	-1.8	-2.6	0.6	0.1	-3.2	-3.0	0.2
West Germany	-1.0	-2.4	-0.9	-2.0	-1.5	-1.1	0.4
United Kingdom	-1.2	-2.4	-0.5	-0.5	-1.9	-1.9	–
United States	-1.2	-1.5	0.5	-1.4	-2.0	-1.3	0.7

[1] Excludes government, households, and nonprofit organizations.

SOURCE Based on J. W. Kendrick, "International comparisons of recent productivity trends," in W. Fellner, ed., *Essays in Contemporary Economic Problems* (Washington, D.C.: American Enterprise Institute, 1981); and on Organisation for Economic Co-operation and Development, *Economic Outlook: Historical Statistics, 1960-1972* (Paris, 1984).

Table C-3

Change in Average Annual Growth Rates of Selected Manufacturing Indicators, Ten OECD Countries, 1955-73/1974-80

	Output	Labour	Capital	Labour productivity	Factor productivity	Factor substitution
	(Per cent)					
Japan	-8.5	-6.0	-3.7	-2.5	-3.3	0.8
Belgium	-5.4	-4.5	-1.4	-0.9	-2.0	1.1
United Kingdom	-5.1	-3.3	-2.6	-1.8	-2.0	0.2
Sweden	-4.9	-1.0	-2.4	-3.9	-3.3	-0.6
West Germany	-4.8	-3.7	-4.2	-1.1	-0.9	-0.2
Netherlands	-4.7	-3.6	-1.4	-1.1	-1.8	0.7
France	-4.2	-3.6	-0.1	-0.6	-1.8	1.2
Canada	-4.1	-1.8	-0.8	-2.3	-2.7	0.4
Italy	-3.7	-1.0	-1.8	-2.7	-2.4	-0.3
United States	-3.1	-2.2	-0.9	-0.9	-1.3	0.4

SOURCE M. Bruno, "World shocks, macroeconomic response, and the productivity puzzle," in R.C.O. Matthews, ed., *Slower Growth in the Western World* (London: Heinemann, 1982), p. 87; and estimates by the Economic Council of Canada.

Table C-4

Change in Average Annual Growth Rates of Output and Output per Person Employed, Six OECD Countries, 1967-73/1973-79

	Agriculture		Mining		Utilities		Construction		Commerce		Transportation		Services	
	Output	Output per person employed	Output	Output per person employed	Output	Output per person employed	Output	Output per person employed	Output	Output per person employed	Output	Output per person employed	Output	Output per person employed
	(Per cent)													
Canada	1.4	-1.6	-7.6	-14.1	-4.7	-3.9	-2.0	-3.4	-2.1	-3.5	-3.2	-2.6	-2.9	2.3
France	-1.1	-2.7	-	-1.7	-3.1	-4.0	-3.4	-1.2	-2.0	-0.7	-1.0	-1.7	-1.6	-0.6
Japan	-3.3	-7.8	-4.5	-16.0	-4.3	0.3	-10.8	-8.3	-7.9	-7.5	-7.1	-5.0	-2.0	-1.7
United Kingdom	-2.2	-3.8	20.9	15.7	-2.6	-7.2	-3.5	-1.9	-3.0	-3.5	-3.0	-3.4	-0.8	-0.3
United States	-0.2	-1.6	0.2	-5.3	-3.9	-3.7	0.9	1.9	-2.4	-1.8	-0.8	-1.2	-0.1	-0.1
West Germany	-2.0	-3.4	-7.0	-6.3	-4.2	-7.1	-3.9	-0.3	-1.6	-0.4	-0.9	0.6	-1.1	-0.6

SOURCE Based on A. D. Morgan, "Productivity in the 1960s and 1970s," in Matthews, ed., *Slower Growth in the Western World;* and estimates by the Economic Council of Canada.

Table C-5

Average Annual Change in Output per Hour in Manufacturing, Twelve OECD Countries, 1973-84

	1973-80	1981	1982	1983	1984	1973-84
			(Per cent)			
Belgium	6.4	5.7	1.6	6.6	..	5.9
Canada	2.0	2.0	-2.8	6.4	4.0	1.7
Denmark	4.6	5.2	-0.8	3.0	4.1	3.6
France	5.0	2.6	6.5	4.3	5.0	4.6
Italy	3.5	3.5	2.0	2.4	6.3	3.7
Japan	7.2	5.5	7.1	5.1	9.5	7.3
Netherlands	5.5	3.6	2.5	7.2	..	4.9
Norway	2.0	0.4	2.7	5.9	1.7	2.3
Sweden	2.2	0.4	3.0	8.4	6.8	2.9
United Kingdom	1.3	5.9	4.6	6.7	3.9	2.3
United States	1.7	3.1	2.1	4.3	3.5	2.0
West Germany	4.0	1.8	1.2	4.7	4.7	3.3

SOURCE Bureau of Labor Statistics, U.S. Department of Labor, *News* (June 1985).

Table C-6

Index of Output per Hour in Manufacturing, Twelve OECD Countries, Selected Years, 1950-84

	1950	1955	1960	1965	1970	1975	1980	1984[1]
				(1977=100)				
Belgium	--	--	32.8	40.5	59.9	86.0	119.7	137.0
Canada	34.6	42.5	50.3	62.7	76.8	91.0	101.9	111.9
Denmark	27.5	29.9	36.4	47.4	65.3	94.4	114.3	123.6
France	22.5	28.0	36.3	49.0	69.3	88.4	112.4	135.2
Italy	20.9	29.2	36.5	52.9	72.7	91.1	116.9	134.4
Japan	9.0	15.1	22.0	33.1	61.4	85.3	128.6	167.4
Netherlands	20.0	25.0	31.7	41.3	63.0	85.1	114.6	130.4
Norway	39.1	43.4	54.6	64.4	81.7	96.8	109.3	121.4
Sweden	30.2	33.1	42.3	58.5	80.7	100.2	112.7	134.9
United Kingdom	44.0	47.4	53.8	63.9	77.6	94.5	99.9	123.0
United States	49.4	56.4	60.0	74.6	79.2	93.4	101.7	115.6
West Germany	19.4	27.7	39.8	53.9	70.9	89.8	108.4	122.3

[1] The data for Belgium and the Netherlands are for 1983.

SOURCE Data from the Bureau of Labor Statistics, U.S. Department of Labor, June 1985.

Table C-7

Components of the Slowdown in Total Factor Productivity in Manufacturing,[1] Ten OECD Countries, 1955-73/1974-80

	TFP slowdown	Contributing factors: Input prices	Contributing factors: Demand slowdown	Contributing factors: Unexplained residual
	(Per cent)	(Percentage points)		
Belgium	-1.96	-1.05	-0.58	-0.33
Canada	-2.66	-1.20	-0.71	-0.75
France	-1.84	-1.11	-0.87	0.14
Italy	-2.37	-2.31	-0.92	0.86
Japan	-3.30	-1.11	-2.19	-
Netherlands	-1.79	-1.55	-0.83	0.59
Sweden	-3.38	-1.64	-0.65	-1.09
United Kingdom	-2.05	-1.34	-0.66	-0.05
United States	-1.34	-0.69	-0.61	-0.04
West Germany	-0.95	-0.40	-0.66	0.11
Mean	-2.16	-1.24	-0.87	-0.05

[1] These estimates were calculated using a regression equation with the change in the growth of total factor productivity between 1974-80 and 1955-73 as the dependent variable and the change in the rate of growth of relative input prices lagged one year and the change in the rate of growth of absorption (representing demand) as independent variables. The regression equation utilized had 10 observations - one for each country.

SOURCE Bruno, "World shocks, macroeconomic response, and the productivity puzzle."

Table C-8

Industrial R&D Spending as a Proportion of GDP, Ten OECD Countries, Selected Years, 1963-81

	1963[1]	1973	1979	1981
	(Per cent)			
Canada	0.5	0.6	0.7	0.8
Denmark	..	0.6	0.7	0.8
France	0.8	1.3	1.4	1.5
Italy	0.4	0.5	0.6	0.7
Japan	0.8	1.3	1.4	1.6
Netherlands	1.1	1.4	1.3	1.3
Norway	0.4	..	0.8	0.8
Sweden	0.9	1.5	2.0	2.3
United States	2.1	1.9	1.8	2.0
West Germany	0.9	1.5	2.1	2.2

[1] For the Netherlands, Sweden, and West Germany, the data are for 1964.

SOURCE Based on data from Statistics Canada and on OECD, "Science and technology indicators," Paris, March 1983.

Table C-9

Index of Specialization in Trade of High-Technology Products,[1] Eleven OECD Countries, Selected Years, 1963-81

	1963	1970	1978	1981
	(OECD average = 1.00)			
Belgium	0.65	0.72	0.81	0.80
Denmark	0.65	0.70	0.63	0.60
France	0.93	1.00	0.96	0.88
Greece	0.07	0.07	0.16	0.20
Ireland	0.42	0.61	0.92	1.07
Italy	0.83	0.87	0.65	0.60
Japan	0.72	1.07	1.27	1.37
Netherlands	1.10	0.85	0.68	0.64
United Kingdom	1.02	0.94	0.92	1.00
United States	1.27	1.18	1.27	1.19
West Germany	1.20	1.06	0.99	1.00

[1] These indices for each country were calculated on the ratio of the country's share in world high-technology exports to its share in world exports of manufactured products.

SOURCE Based on B. Cardiff, "Innovation and trade in high-technology products," *European Economy*, no. 16 (July 1983).

Table C-10

Employment[1] of University Graduates and Total Employment, by Sector, Canada, 1971 and 1981

	1971		1981	
	University graduates	Total employment	University graduates	Total employment
	(Per cent)			
Primary	3.0	9.1	3.6	7.1
Manufacturing	10.6	21.5	9.2	19.2
Construction	1.7	6.8	1.7	6.5
Transportation, communications, and utilities	4.0	8.4	4.4	8.1
Trade	5.8	16.0	7.0	16.9
Finance and insurance	3.8	4.5	5.5	5.4
Services	59.1	25.7	57.3	29.3
Education	34.2	7.2	30.0	6.6
Health and welfare	11.2	6.5	10.6	7.4
Business services	8.4	2.6	10.6	4.1
Other services	5.3	9.4	6.1	11.2
Public administration	12.1	8.0	11.4	7.6
	100.0	100.0	100.0	100.0
Public sector	57.4	21.7	52.0	21.6
Commercial sector	42.6	78.3	48.0	78.4
	100.0	100.0	100.0	100.0

[1] Excludes persons 15 years and over who had not worked during the year prior to the census or during the census year; also excluded are those whose industry affiliation could not be determined.

SOURCE Based on census data from Statistics Canada.

Table C-11

Success at Improving Productivity among Gain-Sharing Companies,[1] United States, 1980s

	Piece work	Group productivity	Profit sharing	Stock purchase
	(Per cent)			
Successful	77	74	73	61
Unsuccessful	3	2	5	15
Too early to evaluate	0	16	2	12
Don't know	1	0	0	1
No response	19	8	20	11
Total	100	100	100	100

[1] Companies with 500 or more employees.

SOURCE W. C. Freund and E. Epstein, *People and Productivity: The New York Stock Exchange Guide to Financial Incentive and the Quality of Work Life* (New York: Dow Jones Irwin, 1984).

Table C-12

Average Age of Real Fixed Capital Stock in the Private Nonfarm Economy, Nine OECD Countries, Selected Years, 1960-78

	1960	1973	1978
		(Years)	
Belgium	12.00	6.26	6.09
Canada	12.00	12.20	12.33
France	12.26	9.26	9.00
Italy	10.60	7.81	7.89
Japan	10.00	4.87	5.33
Sweden	10.00	10.71	11.17
United Kingdom	12.00	12.48	12.74
United States	11.55	9.73	9.83
West Germany	8.92	8.39	9.07

SOURCE Kendrick, "Recent productivity trends."

Table C-13

Major Policy-Induced Distortions

	Nature of distortion	Character	Level of government
Category of distortion and government policy:			
Distortions of goods flows			
Provincial government procurement policies	Preference given to in-province contractors	Explicit	Provincial
Liquor buying and pricing policies	Buying and pricing by provincial liquor commissions give preference to in-province suppliers	Explicit	Provincial
Marketing boards	Price setting and quotas on agricultural products	Implicit	Primarily provincial
Tariffs, trade-restrictions and standards	"Protection" of national economy, affecting interprovincial trade	Implicit/explicit	Federal and provincial
Taxes	Limited neighbourhood effects of differential sales tax rates across provinces; effects from federal excise taxes and manufacturers sales tax	Explicit/implicit	Federal and provincial
Distortions of capital flows			
Provincial investment plans	Shelter from provincial taxes for in-province investors	Explicit	Provincial
Provincial heritage funds	Accumulation of provincial revenues in fund largely reinvested in province	Explicit; distortion offset by private capital markets	Provincial
Business subsidies	Grants, cheap loans for investment in provinces	Explicit	Primarily provincial
DREE	Targeted capital financing for regional investment	Explicit	Federal
Provincial crown corporations	Exempt from federal taxes	Implicit	Federal and provincial
Distortions of labour flows			
Unemployment insurance	Subsidy to "search," raising unemployment rate; regional features in the program	Implicit plus small component	Federal
Equalization	Cash transfer to "equalize" differences in tax bases between provinces	Explicit	Federal
Occupational licensing	Restrictions on hiring practices within provinces	Explicit	Provincial

SOURCE Based on M. J. Trebilcock, J. R. S. Prichard, T. J. Courchene, and J. Whalley, eds., *Federalism and the Canadian Economic Union*, Ontario Economic Council (Toronto: University of Toronto Press, 1983), pp. 168-69.

Table D-1

Gross Fixed Investment as a Proportion of Real GDP, by Major Category, Seven OECD Countries, 1961-82

	Canada	France	Italy	Japan	United States	United Kingdom	West Germany
				(Per cent)			
Total gross fixed capital formation							
1961-69	22.0	22.8	21.3	32.6	18.0	18.0	24.9
1970-73	21.7	23.6	20.6	35.1	18.4	18.6	25.2
1974-82	22.8	22.1	19.9	31.6	18.1	17.9	21.2
1961-82	22.3	22.7	20.6	32.7	18.1	18.1	23.4
Private nonresidential investment							
1961-69	13.4	. .	. .	21.5*	10.9	10.2	13.6
1970-73	12.8	13.4	11.9	19.0	10.5	9.0	13.4
1974-82	14.3	12.5	11.1	15.5	11.4	9.7	11.5
1961-82	13.7	12.8**	11.4**	18.0***	11.0	9.8	12.7
Government nonresidential investment							
1961-69	4.2	3.9	2.9	4.6*	2.9	4.3	4.0
1970-73	3.7	3.4	3.0	8.6	3.1	6.2	4.2
1974-82	3.1	3.1	3.4	8.9	2.6	5.0	3.5
1961-82	3.7	3.4	3.2	7.6***	2.8	5.0	3.8
Residential investment							
1961-69	4.5	. .	. .	5.7	4.2	3.5	7.2
1970-73	5.2	6.8	5.6	7.5	4.8	3.4	7.5
1974-82	5.3	6.6	5.3	7.2	4.1	3.1	6.2
1961-82	5.0	6.7**	5.4**	6.6	4.3	3.3	6.8

*1965-69.
**1970-82.
***1965-82.
SOURCE OECD, *National Accounts.*

Table D-2

Sources of Investment in Selected Manufacturing and Mining Industries, Canada, 1976-84

	1976	1977	1978	1979	1980	1981	1982	1983	1984
					(Per cent)				
Manufacturing:									
Food and beverages									
Domestic	62.6	61.3	64.1	66.9	74.1	71.9	67.7	61.0	63.2
Foreign	37.4	38.7	35.9	33.1	25.9	28.1	32.3	39.0	36.8
Printing and publishing									
Domestic	91.3	90.6	94.3	93.0	92.9	88.8	88.6	90.7	90.5
Foreign	8.7	9.4	5.7	7.0	7.1	11.2	11.4	9.3	9.5
Paper and allied products									
Domestic	48.2	50.0	59.9	58.4	59.9	65.3	70.8	71.2	71.7
Foreign	51.8	50.0	40.1	41.6	40.1	34.7	29.2	28.8	28.3
Nonelectrical machinery									
Domestic	42.6	38.1	42.2	40.4	42.4	33.7	31.9	35.0	30.5
Foreign	57.4	61.9	57.8	59.6	57.6	66.3	68.1	65.0	69.5
Mining:									
Total mining									
Domestic	..	..	40.2	40.0	44.9	54.7	58.4	60.3	59.3
Foreign	..	..	59.8	60.0	55.1	45.3	41.6	39.7	40.7
Oil and gas									
Domestic	..	..	35.4	37.4	41.4	54.4	55.6	56.9	57.7
Foreign	..	..	64.6	62.6	58.6	45.6	44.4	43.1	42.3
Nonmetallic minerals									
Domestic	..	..	44.4	40.0	53.7	57.6	74.6	76.5	69.7
Foreign	..	..	55.6	60.0	46.3	42.4	25.4	23.5	30.3

SOURCE Based on data from Statistics Canada.

Table D-3

Share of Canadian Exports in Total World Exports, Selected Categories, 1955, 1960, 1965, and 1970-82

		Raw materials				Manufacturing				
	Total	Food	Agricultural products	Ores	Mineral fuels	Chemical products	Iron and steel	Nonferrous metals	Total	Transportation equipment and machinery
	(Per cent)									
1955	4.7	4.6	7.0	13.7	0.6	5.2	1.8	16.1	5.4	1.7
1960	4.3	4.4	6.7	17.1	1.2	2.5	2.2	15.3	4.5	1.5
1965	4.4	4.9	8.1	16.6	2.3	2.4	2.2	13.5	3.6	2.6
1970	5.2	4.3	9.1	16.9	3.4	2.5	2.4	12.4	3.2	5.9
1971	5.1	4.7	10.1	17.1	3.5	2.4	2.2	12.6	3.0	5.8
1972	4.9	4.4	10.1	16.7	4.2	2.2	2.0	11.4	2.9	5.5
1973	4.4	4.1	8.7	16.6	3.9	1.9	1.7	9.6	2.5	4.8
1974	3.9	4.0	9.1	14.3	3.0	1.7	1.7	8.3	2.6	4.3
1975	3.7	3.8	9.1	13.1	3.1	1.7	1.6	9.2	2.3	4.0
1976	3.9	3.8	10.3	14.8	2.7	2.1	1.9	9.2	2.5	4.3
1977	3.7	3.4	10.3	14.6	2.3	2.2	2.1	8.8	2.3	4.3
1978	3.4	3.1	9.9	11.4	2.2	2.2	2.1	8.8	2.3	3.9
1979	3.4	3.3	10.0	12.6	2.2	2.5	2.0	6.9	2.2	3.8
1980	3.2	3.5	9.3	11.6	1.9	2.6	2.3	7.6	2.3	3.2
1981	3.6	4.0	9.4	12.4	2.0	3.1	2.7	8.4	2.6	3.7
1982	3.6	. .	. .	. .	. .	. .	. .	. .	. .	. .

SOURCE United Nations Conference on Trade and Development, *Handbook of International Trade and Development Statistics* (Geneva: UNCTAD, 1983).

Notes

CHAPTER 2

1 Department of Regional Industrial Expansion, "Capital investment intentions survey," Ottawa, April 1985.

2 Economic Council of Canada, *Steering the Course*, Twenty-First Annual Review (Ottawa: Supply and Services Canada, 1984).

3 "Agreement to amend the memorandum of agreement of September 1, 1981 between the Government of Canada and the Government of Alberta relating to energy pricing and taxation," Calgary, 30 June 1983.

4 *The Western Accord*, an agreement between the Governments of Canada, Alberta, Saskatchewan and British Columbia on oil and gas pricing and taxation (Ottawa, March 1985).

5 National Energy Board, *Canadian Energy Supply and Demand, 1983-2005* (Ottawa: Supply and Services Canada, 1984).

6 *The Atlantic Accord*, Memorandum of agreement between the Government of Canada and the Government of Newfoundland and Labrador on offshore oil and gas resource management and revenue sharing (Ottawa, February 1985). The Accord gives Newfoundland a substantial share of revenues and outlines joint-management procedures through a board representing both parties.

7 J. Cody, S. S. Software Limited, "Population, households and housing requirements for the census metropolitan areas of Canada," a study prepared for Canada Mortgage and Housing Corporation, Ottawa, 1981.

8 Economic Council of Canada, *A Climate of Uncertainty*, Seventeenth Annual Review (Ottawa: Supply and Services Canada, 1980), Chapter 3; and ECC, *Steering the Course*, Chapters 2 and 3.

9 The Honourable James F. Kelleher, Minister for International Trade, "How to secure and enhance Canadian access to export markets," Discussion Paper, Government of Canada, Ottawa, 1985.

10 See Economic Council of Canada, *Looking Outward: A New Trade Strategy for Canada* (Ottawa: Information Canada, 1975).

CHAPTER 3

1 Economic Council of Canada, *The Bottom Line: Technology, Trade, and Income Growth* (Ottawa: Supply and Services Canada, 1983), p. 4.

2 ECC, *The Bottom Line*, pp. 3-4.

3 See, for example, M. Denny, M. Fuss, and L. Waverman, "The measurement and interpretation of total factor productivity in regulated industries, with an application to Canadian telecommunications," in T. Cowing and R. Stevenson, eds., *Productivity Measurement in Regulated Industries* (New York: Academic Press, 1981); F. Kiss, "Productivity gains in Bell Canada," in L. Courville, A. De Fontenay, and R. Dobell, eds., *Economic Analysis of Telecommunications* (Amsterdam: Elsevier-North Holland, 1982); D. W. Caves, L. R. Christensen, and J. A. Swanson, "Productivity growth, scale economies, and capacity utilization in U.S. railroads, 1955-74," *American Economic Review* 71, no. 5 (December 1981):994-1002; M. Daly and P. S. Rao, "Productivity, scale economies, and technical change in Ontario Hydro," *Southern Economic Journal* (forthcoming); M. Daly, R. Greehan, and P. S. Rao, "Productivity, scale economies, and technical progress in the Canadian life insurance industry," *International Journal of Industrial Organization* (forthcoming); and F. M. Gallop and M. J. Robert, "The sources of economic growth in the U.S. electric power industry," in Cowing and Stevenson, *Productivity Measurement*.

4 See C. R. Hulten, "Growth accounting with intermediate inputs," *Review of Economic Studies* 45, no. 3 (1978):511-18; D. W. Jorgenson, "Energy prices and productivity growth," *Scandinavian Journal of Economics* 83, no. 2 (1981):165-79; and P. S. Rao and R. S. Preston, "Inter-factor substitution and total factor productivity growth: Evidence from Canadian industries," Discussion Paper 242, Economic Council of Canada, Ottawa, October 1983.

5 In the aggregate, the rate of growth of output per person is equal to the rate of growth of total factor productivity plus a contribution from the capital/labour ratio. The contribution of capital is obtained by multiplying the rate of growth of the capital/labour (person-hours) ratio by the share of capital in the total value of production in the economy. For a detailed discussion of this point, see Jorgenson, "Energy prices and productivity growth."

6 See E. R. Berndt and G. C. Watkins, *Energy Prices and Productivity Trends in the Canadian Manufacturing Sector, 1957-76*, Economic Council of Canada (Ottawa: Supply and Services Canada, 1981).

7 See R. W. Shephard, *Cost and Production Functions* (Princeton, N.J.: Princeton University Press, 1953); L. R. Christensen, D. Jorgenson, and L. Lau, "Transcendental logarithmic production frontiers," *Review of Economics and Statistics* 55, no. 1 (February 1973):28-45; E. R. Berndt, "Energy price increases and the productivity slowdown in United States manufacturing," *The Decline in Productivity Growth*, Conference series no. 22 (Boston: First Reserve Bank of Boston, 1980), pp. 60-89; and M. Denny and M. Fuss, *Productivity: A Selected Survey of Recent Developments and the Canadian Experience* (Toronto: Ontario Economic Council, 1982).

8 For a detailed discussion of the relationship between real wage rigidity, poor economic performance, and high unemployment, see E. Malinvaud, "Wages and unemployment," *Economic Journal* 92, no. 365 (March 1982):1-12; J. D. Sachs, "Real wages and unemployment in the OECD countries," *Brookings Papers on Economic Activity*, no. 1 (1983):255-89; and Organisation for Economic Co-operation and Development, *Employment Outlook*, no. 2 (Paris: OECD, September 1984).

9 See Rao and Preston, "Inter-factor substitution."

10 Indeed, that assumption is less valid if observed wage differentials are not highly correlated with productivity differences. Labour market imperfections – such as wage differentials between male and female workers stemming from discrimination – and the part-time nature of work, coupled with a substantial increase in the proportion of women in the work force, could lead to an erroneous conclusion. For a useful, recent summary of such problems, see D. J. Treiman and H. I. Hartmann, eds., *Women, Work, and Wages: Equal Pay for Jobs of Equal Value* (Washington, D.C.: National Academy Press, 1981), Chapters 2 and 3.

11 See Jorgenson, "Energy prices and productivity growth"; and Rao and Preston, "Inter-factor substitution."

12 See Denny and Fuss, *Productivity: A Selected Survey*; Berndt, "Energy price increases"; and Christensen *et al.*, "Transcendental logarithmic production frontiers."

13 See J. Helliwell, "Stagflation and productivity decline in Canada, 1974-1982," *Canadian Journal of Economics* 17, no. 2 (May 1984):191-216; T. Wilson, "Productivity and unit costs over the medium term," in Data Resources of Canada, *Canadian Review: Looking Ahead at the Next 25 Years* (Toronto, Fall 1983); M. P. Bruno, "Raw materials, profits, and the productivity slowdown," *Quarterly Journal of Economics* 99, no. 1 (February 1984):1-29; J. Helliwell, P. H. Strum, and G. Salou, "International comparison of the sources of productivity slowdown, 1973-1982," *European Economic Review* (forthcoming); and Rao and Preston, "Inter-factor substitution."

14 See ECC, *Looking Outward* and *The Bottom Line*. See also R. G. Harris, with D. Cox, *Trade, Industrial Policy and Canadian Manufacturing* (Toronto: Ontario Economic Council, 1983); and R. G. Lipsey and M. G. Smith, *Taking the Initiative: Canada's Trade Options in a Turbulent World* (Montreal: C. D. Howe Institute, 1985).

15 J. R. Baldwin and P. Gorecki, "Canada/U.S. productivity differences in the manufacturing sector: 1970-1979," in *Canadian Industry in Transition*, a report prepared for the Royal Commission on the Economic Union and Development Prospects for Canada (Toronto: University of Toronto Press, forthcoming).

16 Not only does the rate of growth of technical change vary over time, but it is also influenced by variations in output level and factor prices. If the technical change is unaffected by variations in input prices, it is said to be neutral. Technical change could also be "factor-using" or "factor-saving." For example, technical change is energy-using if an increase in the relative price of energy raises the total cost for a given level of output. It is energy-saving if the increase reduces the total cost. Alternatively, technical change is energy-using (biased towards the use of energy) if changes in technology result in an increase in the energy share of the value of output, holding all input prices constant. The converse is true for energy-saving technical change. For a thorough discussion of biased technical change, see H. P. Binswanger, "The measurement of technical change biases with many factors of production," *American Economic Review* 64, no. 6 (December 1974):964-76; and Jorgenson, "Energy prices and productivity growth."

17 See Rao and Preston, "Inter-factor substitution."

CHAPTER 4

1 On the decline in TFP growth, see, for example, Rao and Preston, "Inter-factor substitution"; A. Lindbeck, "The recent slowdown of productivity growth," *Economic Journal* 93, no. 369 (March 1983):13-34; and J. W. Kendrick, "International comparisons of recent productivity trends," in W. Fellner, ed., *Essays in Contemporary Economic Problems* (Washington, D.C.: American Enterprise Institute, 1981). Helliwell *et al.*, however, believe that factor substitution was important; see Helliwell, Strum, and Salou, "Sources of productivity slowdown." On the slowdown in capital spending, see International Monetary Fund, *World Economic Outlook* (April 1985), p. 167.

2 In the United States, economists are divided on the question whether the recent improvement in productivity growth is just a cyclical effect or a secular phenomenon. See, for example, R. J. Gordon, "Unemployment and potential output in the 1980s," *Brookings Papers on Economic Activity*, no. 2 (1984):537-68, as well as the comment by M. N. Baily.

3 A. Sharpe, "A review of the productivity slowdown literature," unpublished draft, Long Range and Structural Analysis Division, Department of Finance, Ottawa, October 1982.

4 For an extended discussion, see National Academy of Sciences, *Measurement and Interpretation of Productivity* (Washington, D.C., 1979).

5 Whereas the ratio of part-time to total workers rose at an average annual rate of 6 per cent during the period 1954-74, it increased by only 4 per cent during the period 1975-82.

6 R. J. Gordon, comment on M. N. Baily, "Productivity and services of capital and labour," *Brookings Papers on Economic Activity*, no. 1 (1981):55.

7 See, for example, R. Mirus and R. S. Smith, "Canada's irregular economy," *Canadian Public Policy* 7, no. 3 (Summer 1981):444-53.

8 T. Siedule and K. Newton, "Tentative measure of labour hoarding, 1961-77," Discussion Paper 128, Economic Council of Canada, Ottawa, April 1979.

9 Evidence from the "help wanted" index is cited in N. M. Meltz, "Comment," in S. Maital and N. M. Meltz, eds., *Lagging Productivity Growth: Causes and Remedies* (Cambridge, Mass.: Ballinger, 1980), pp. 76-80.

10 The positive association between innovation and demand is called the "Schmookler hypothesis" in the literature. For a recent test and confirmation of this hypothesis, see F. M. Scherer, "Demand pull and technological invention: Schmookler revisited," *Journal of Industrial Economics* 30, no. 3 (March 1982):225-37. With respect to resource allocation, it has been argued that, in Britain, adjustment to economic changes was much more rapid during the 1960s, when demand was rising, than during the 1970s; see G.D.N. Worswick, "The relationship between pressure of demand and productivity," in R.C.O. Matthews, ed., *Slower Growth in the Western World* (London: Heinemann, 1982), pp. 29-42.

In addition, some have claimed that a demand slowdown would also lead to an increase in "X-inefficiency"; see H. Leibenstein, "X-efficiency, intra firm behavior and growth," in Maital and Meltz, *Lagging Productivity Growth*, pp. 199-220.

11 M. Bruno, "World shocks, macroeconomic response, and the productivity puzzle," in Matthews, ed., *Slower Growth in the Western World*, pp. 83-104.

12 See J. F. Helliwell, M. E. MacGregor, and T. Padmore, "Economic growth and productivity in Canada, 1955-1990," Discussion Paper, Department of Economics, University of British Columbia, Vancouver, 1984.

13 Kiss, "Productivity gains in Bell Canada."

14 J. R. Baldwin and P. K. Gorecki, "Trade, tariffs, product diversity and length of production runs in Canadian manufacturing industries, 1970-79," Discussion Paper 247, Economic Council of Canada, Ottawa, November 1983.

15 J. R. Baldwin and P. K. Gorecki, with J. McVey and J. Crysdale, "Trade, tariffs and relative plant scale in Canadian manufacturing industries, 1970-79," Discussion Paper 232, Economic Council of Canada, Ottawa, May 1983.

16 See F. M. Scherer, "The world productivity growth slump," Discussion Paper IIM/IP84-25, IIM Industrial Policy, Berlin, August 1984.

17 R. E. Evenson, "International invention: Implications for technology market analysis," in Z. Griliches, ed., *R&D, Patents and Productivity* (Chicago: University of Chicago Press, 1984).

18 See, for example, Z. Griliches, "R&D and the productivity slowdown," *American Economic Review* 70, no. 2 (May 1980):343-48.

19 See, for example, Helliwell, Strum, and Salou, "Sources of productivity slowdown."

20 D. G. McFetridge and J. P. Warda, *Canadian R&D Incentives: Their Adequacy and Impact* (Toronto: Canadian Tax Foundation, 1983).

21 E. Mansfield and L. Switzer, "How effective are Canada's direct tax incentives for R and D?", *Canadian Public Policy* 11, no. 2 (1985):241-46.

22 B. Cardiff, "Innovation and trade in high-technology products," in *European Economy*, no. 16 (July 1983):124-26.

23 See, for example, Helliwell, Strum, and Salou, "Sources of productivity slowdown."

24 S. Globerman, *The Adoption of Computer Technology by Insurance Companies*, Economic Council of Canada (Ottawa: Supply and Services Canada, 1984); and S. Globerman, *The Adoption of Computer Technology in Selected Canadian Service Industries*, Economic Council of Canada (Ottawa: Supply and Services Canada, 1981). See also ECC, *The Bottom Line*, Chapter 5.

25 ECC, *The Bottom Line*, p. 55; and S. Globerman, "Canadian science policy and technological sovereignty," *Canadian Public Policy* 4, no. 1 (Winter 1978):34-45.

26 For instance, the projections developed by Kendrick show that productivity growth in the United States will accelerate in the 1980s by about 1 percentage point, compared with the annual rate of 1.1 per cent observed during the period 1973-78, but the rates experienced in the period 1948-66 are not likely to be repeated. The Canadian experience is not likely to be much different from that projected for the United States. See J. W. Kendrick, "Impacts of rapid technological change in the United States business economy and in the communications, electronic equipment and semiconductor industry groups," in *Microelectronics, Productivity and Employment* (Paris: Organisation for Economic Co-operation and Development, 1981), pp. 25-37.

27 See, for example, M. Denny and M. Fuss, "The effects of factor prices and technological change on the occupational demand for labour: Evidence from Canadian telecommunications," *Journal of Human Resources*, no. 18 (September 1983):161-76. The key question is whether growth elsewhere in the economy will offset the decline or stagnation of employment in certain activities. One answer to this is provided by a simulation model developed by Rahn. His major conclusion is that the "sky-is-falling" scenario is highly unlikely, since its occurrence would require an unrealistic combination of events. More specifically, extremely high rates of productivity increases (a factor of 10) must occur simultaneously with high rates of diffusion of the "new" technology to a large sector of the economy in order to generate high rates of unemployment.

28 A recent study of the Japanese experience found a clear positive correlation between industrial adoption of information technology and employment growth; see R. Z. Lawrence, "The employment effects of the new information technologies," *Brookings Discussion Papers in International Economics*, no. 20 (Washington, D.C.: November 1984). Some have also argued that because of the new technologies (especially the computer), the developed countries will experience an employment decline as a result of their trade with the developing countries. Yet the employment effects of trade in manufactured goods between the OECD and the developing countries have been positive for the developed countries, as shown in B. Balassa, "The changing international division of labour in manufactured goods," *Banca Nazionale del Lavoro Quarterly Review*, no. 129 (September 1979):243-85. The sector with the largest employment gains resulting from trade with Third World countries has been nonelectrical machinery – the sector that includes computers.

29 See, for example, L. Thurow, "W. A. Mackintosh Lecture," Discussion Paper 553, Institute for Economic Research, Queen's University, Kingston, Ontario, 1984. The decline can be explained in part by an increase in the proportion of high school students who go on to college. But even after taking account of the changes in the socioeconomic composition of students, it appears that a large part of the decline in test scores remains to be explained; see U.S. College Entrance Examination Board, *On Further Examination*, Report of the advisory panel on the scholastic aptitude test score decline (New York, 1977).

30 The leading exponent of this view is R. J. Freeman, in "Overinvestment in college training?", *Journal of Human Resources* 10, no. 3 (Summer 1975):287-312.

31 See P. Davenport, "Federal funding of university education," in D. M. Nowlan and R. Bellaire, eds., *Financing Canadian Universities: For Whom and By Whom?* (Toronto: University of Toronto, Institute for Policy Analysis, 1981).

32 The most popular among the public-sector fields has been education. Between 1960-61 and 1970-71, undergraduate enrolment in faculties of education increased from 10.8 to 13.9 per cent of all undergraduate enrolment; however, it dropped to 10.6 per cent in 1981. Engineering, on the other hand – the field most geared to the needs of the private sector – saw its share of undergraduate enrolments drop from 15 per cent in 1961 to 9.3 per cent in 1971, and then recover to 11.2 in 1981.

33 In 1978, the commercial sector in the United States accounted for 57 per cent of all employed graduates, as opposed to 40 per cent in Canada. A major difference lay in the key sectors of manufacturing and trade, which employed 14 and 12 per cent of all U.S. university graduates, respectively – approximately double the combined proportions for Canada. Education, on the other hand, employed only 24 per cent of American graduates, as opposed to 41 per cent of their Canadian counterparts. See W. G. Picot, *University Graduates and Jobs: Changes during the 1970s*, Statistics Canada, Cat. 89-501, 1983.

34 Globerman, *Adoption of Computer Technology in Selected Canadian Service Industries*.

35 For instance, L. Selleck, "Jobs for university graduates: Planning or choice," *Canadian Public Policy* 9, no. 1 (March 1983):95-104.

36 Poor management practices have been blamed for the higher cost of producing automobiles in the United States relative to Japan; see W. J. Abernathy, K. B. Clark, and A. M. Kantrov, "The new industrial competition," *Harvard Business Review* 59, no. 5 (September/October 1981):68-81. See, also, R. L. Jenkins, *et al.*, "Probing opinions: Report cards on the MBA," *Harvard Business Review* 62, no. 5 (September/October 1984):20-30; the authors present the results of a survey that is critical of recent MBA graduates. For Canada, see D. J. Daly, "Canada's comparative advantage," Discussion Paper 135, Faculty of Administration Studies, York University, Toronto, 1979.

37 Economic Council of Canada, *In Short Supply: Jobs and Skills in the 1980s* (Ottawa: Supply and Services Canada, 1982), Chapters 8 and 9.

38 This is the viewpoint expressed in T. E. Weisskopf, S. Bowles, and D. Gordon, "Hearts and minds: A social model of U.S. productivity growth," *Brookings Papers on Economic Activity*, no. 2 (1983):381-450.

39 T. Atkinson, "Differences between male and female attitudes towards work," *Canadian Business Review* 10, no. 2 (Summer 1982):47-51.

40 D. Maki, "The effects of unions and strikes on the rate of growth of total factor productivity in Canada," *Applied Economics* 15, no. 1 (February 1983):29-42.

41 R. Freeman and J. Medoff, *What Do Unions Do?* (New York: Basic Books, 1984); several reviews of this book are found in *Industrial and Labor Relations Review* 38, no. 2 (January 1985):244-63.

42 H. Jain, "Management of human resources and productivity," Working Paper 160, Faculty of Business, McMaster University, Hamilton, 1980.

43 W. C. Freund and E. Epstein, *People and Productivity: The New York Stock Exchange Guide to Financial Incentive and the Quality of Work Life* (New York: Dow Jones Irwin, 1984).

44 D. Nightingale, "Profit sharing: New nectar for worker bees," *Canadian Business Review* 11, no. 1 (Spring 1984):11-14.

45 IMF, *World Economic Outlook* (April 1985), p. 165.

46 Kendrick, "International comparisons of recent productivity trends."

47 Baily, "Productivity and the services of capital and labour"; for a critique of Baily's views, see B. Bosworth, "Capital formation and economic policy," *Brookings Papers on Economic Activity*, no. 2 (1982):273-317.

48 Department of Industry, Trade and Commerce, "Capital investment intentions survey," Ottawa, October 1981.

49 For recent international evidence, see Organisation for Economic Co-operation and Development, "Why do substitution elasticities differ?", Discussion paper, Paris, January 1982. For Canadian evidence, see Rao and Preston, "Inter-factor substitution"; and Daly and Rao, "Productivity, scale economies, and technical change."

50 See, for example, J. Bossons, "Inflation, capital taxation and reform of the personal and corporate income taxes," in W. R. Thirsk and J. Whalley, eds., *Tax Policy Options in the 1980s* (Toronto: Canadian Tax Foundation, 1982).

51 See, for example, M. Proulx, "Comments," in P. Grady, ed., *Peering under the Inflationary Veil*, Proceedings of a conference on inflation-induced distortions in financial reporting and taxation, Economic Council of Canada (Ottawa: Supply and Services Canada, 1982), pp. 30-34.

52 The classic work on the subject is R. Bacon and W. Eltis, *Britain's Economic Problem: Too Few Producers* (London: MacMillan, 1978). For a critical appraisal, see G. Hadjimatheou and A. Skouras, "Britain's economic problem: The growth of the non-market sector? An interchange," *Economic Journal* 89, no. 354 (June 1979):392-401.

53 R. M. Bird and C. Green, "Government intervention in the Canadian economy: A review of the evidence," PEAP Policy Study no. 85-2, Institute for Policy Analysis, University of Toronto, Toronto, March 1985, p. 4.

54 Bird and Green, "Government intervention," p. 32.

55 W. Stanbury and F. Thompson, "The scope for and coverage of regulation in Canada and the United States: Implications for the demand for reform," in W. Stanbury, ed., *Government Regulation: Scope, Growth, Process* (Montreal: Institute for Research in Public Policy, 1980), p. 33.

56 Economic Council of Canada, *Intervention and Efficiency* (Ottawa: Supply and Services Canada, 1982), p. 3.

57 The five programs studied were the Regional Development Incentive Program (RDIP), the Enterprise Development Program (EDP), the Defence Industries Productivity Program (DIPP), the Shipbuilding Assistance Program (SIAP), and the Industrial Research Assistance Program (IRAP); see D. Usher, "The benefits and cost of firm-specific investment grants: A study of five federal programs," Discussion Paper 511, Institute for Economic Research, Queen's University, Kingston, Ontario, January 1983.

58 See C. L. Schultze, "Industrial policy: A dissent," *Brookings Review* 2, no. 1 (Fall 1983):3-12.

59 See, for example, R. W. Crandall, "Regulation and productivity growth," in *The Decline in Productivity Growth*.

60 A number of economists believe, however, that regulation was a significant factor in the slowdown; see Crandall, "Regulation and productivity growth"; and G. B. Christiansen and R. H. Haveman, "Public regulations and the slowdown in productivity growth," *American Economic Review* 71, no. 2 (May 1981):320-25.

61 See, for example, H. Sider, "Productivity in underground coal mining," *Review of Economics and Statistics* 65, no. 2 (May 1983):225-33; R. A. Nelson, "Regulation, capital vintage and technical change in the electric utility industry," *Review of Economics and Statistics* 66, no. 1 (February 1984):59-69; and M. J. Roberts and F. M. Gallop, "Environmental regulations and productivity growth: The case of fossil-fueled electric power generation," *Journal of Political Economy* 91, no. 4 (August 1983):654-74. For Canada, see W. Sims and J. B. Smith, "The impact of environmental regulation on productivity growth," Discussion Paper 241, Economic Council of Canada, Ottawa, September 1983.

CHAPTER 5

1 The European Monetary System was formed by agreement of the members of the European Economic Community in 1978. Under the system, each national currency is fixed relative to a basket of European currencies (the "European currency unit"), which itself floats relative to currencies outside the EMS. All EEC member countries now participate in the EMS, except for the United Kingdom.

2 R. E. Cumby and F. S. Mishkin, "The international linkage of real interest rates: The European-U.S. connection," Working Paper 1423, National Bureau of Economic Research, Cambridge, Mass., 1984.

3 These are the result of cross-border capital flows that represent "portfolio capital movement," as investors try to take advantage of the highest rate of return available in the short run, as well as movements of long-term capital constituting both part of the financing of Canadian economic activity through long-term debt and the purchase of equity, but also reflecting equity investment by Canadians abroad.

4 The word "investor" in this chapter refers to the purchaser or holder of a financial asset. Its meaning should not be confused with the notion of investment used in the next chapter, which refers to the purchase of machinery and equipment and/or the construction of a road or a plant, for example. In this chapter, direct investment is a financial transaction – resulting in the purchase of a firm, for example.

5 For participants in the foreign exchange market who invest many millions of dollars at a time, transaction costs are quite small; to simplify the exposition, these costs will be ignored.

6 Investors in short-term financial assets (those with a maturity of one year or less) can avoid exchange risk by covering their investment on the foreign exchange market, where buyers and sellers can enter into a contract for currency transactions to be completed three, six, nine, or twelve months down the road. For example, a U.S. investor wanting to purchase a Canadian security would buy Canadian dollars from his bank at the spot price (the price quoted for a transaction to be completed immediately) and use them to buy the Canadian asset. At the same time he would enter into a contract with his bank to sell back the Canadian dollars at the time of the asset's maturity, at the "forward price" of the Canadian dollar. (The forward price is the price charged today for future delivery of Canadian dollars.)

7 See R. Solomon, "Official intervention in foreign exchange markets: A survey," *Brookings Discussion Papers in International Economics*, no. 1, (Washington, D.C.: Brookings Institution, June 1983).

8 P. Boothe, K. Clinton, A. Côté, and D. Longworth, "International asset substitutability," Bank of Canada, Ottawa, 1985.

9 For substitutability to apply, it is not necessary that all holders of Hydro-Québec bonds be indifferent as to the currency of issue; only a few need be, as securities prices are always set by the "marginal" bidder.

10 Under perfect asset substitutability, any expansionary monetary policy by the Bank of Canada that resulted in a short-term decline in interest rates would bring about an outflow of funds from Canada to the United States, giving rise to an excess supply of Canadian dollars and an excess demand for U.S. dollars. This would place downward pressure on the relative price of the Canadian dollar; the Bank of Canada would then be forced to intervene in the foreign exchange market by selling U.S.

dollars or U.S.-dollar assets and buying Canadian dollars to support the fixed exchange rate. The ultimate result would be a return of the Canadian money supply and interest rates to their original levels. The Bank of Canada would simply have traded Canadian securities for U.S. dollars or U.S.-dollar securities, and investors would have done the opposite. The new equilibrium situation is exactly the same as the starting point because of the perfect substitutability of U.S.- and Canadian-denominated assets.

11 If the U.S. inflation rate were higher than the Canadian rate, then U.S. goods traded internationally would become more expensive than Canadian goods. Generally, Canadian exports would rise and imports would fall, resulting in a Canadian trade surplus. This growing surplus would put upward pressure on the price of the Canadian dollar, and the Bank of Canada would have to intervene either by buying U.S. dollars in exchange for Canadian dollars, thereby increasing the Canadian money supply, or by increasing the money supply through an open-market purchase of bills. In either case, the long-term effect would be to increase the Canadian rate of inflation.

12 Historically, real and nominal interest rates in Canada have tended to be slightly higher than those in the United States. This may reflect a very small risk premium but could also reflect differences in the taxation treatment of interest income and expenditure.

13 The real exchange rate is a measure of purchasing power. For instance, the Canada/U.S. real exchange rate indicates the purchasing power of the Canadian dollar in the United States, and vice versa. If inflation is greater in Canada than in the United States, then the purchasing power of the Canadian dollar in Canada is falling faster than the purchasing power of the U.S. dollar south of the border. If the Canada/U.S. exchange rate is falling at the same rate as the difference between Canadian and U.S. inflation rates, then the purchasing power of the Canadian dollar will be falling at the same rate, regardless of whether it is spent in Canada or converted into U.S. funds and spent in the United States. Similarly, the purchasing power of the U.S. dollar will be falling at the same rate, whether it is spent in the United States or converted into Canadian dollars and spent in Canada. Under these conditions, the real exchange rate will remain unchanged. If the difference in inflation between the two countries were greater than the rate of decline in the nominal exchange rate, then the real exchange rate would rise, and the Canadian dollar would be more valuable when converted into U.S. dollars and spent in the United States than when spent in Canada. Canadian exports would be more expensive in the United States relative to U.S.-produced goods, and U.S.-produced goods would be less expensive in this country relative to Canadian-produced goods. It is very important to look at what is happening to real exchange rates, because a fall in the nominal exchange rate will only benefit exporters if there is a concomitant fall in the real exchange rate. Because inflation in Canada has, on average, been higher than in the United States over the past few years, the large fall in the nominal exchange rate resulted in a much smaller fall in the real exchange rate.

14 A fall in the exchange rate, by making imports more expensive, can lead to inflationary pressure directly through the higher prices of imported goods. This does not mean, however, that every observed fall in the exchange rate should be associated with an observed increase in inflation. Price level increases are the result of many influences, but the most important consideration here is the source of the change in the exchange rate.

The exchange rate can change because of monetary or real influences originating either internally or externally. The most inflationary impact is that of an exchange rate fall originating in domestic monetary policy. The recent decline in the exchange rate largely comes from external sources, which have a lesser impact on domestic inflation and leave more room for counterinflationary action by the Bank of Canada.

An increase in the domestic money supply leads initially at least, to a decrease in interest rates, an outflow of capital, and downward pressure on the exchange rate. The falling exchange rate leads to increasing prices. At the same time, the decline in interest rates can stimulate spending, which itself is inflationary, as is the increase in the money supply. Thus all three effects are in the same direction.

A change in the U.S. money supply leading to higher interest rates in the United States, an outflow of capital from Canada, and a fall in the exchange rate would have the same inflationary effect as discussed above, through higher prices of imported goods. However, the resultant higher interest rates in Canada would tend to reduce spending and lower inflation. If the Bank of Canada held money supply growth constant, there would be no added inflationary pressure from that source. In that case, there would be one positive, one negative, and one neutral effect. If the Bank of Canada moved to stem the outflow of capital and the fall in the exchange rate by reducing the money supply and raising interest rates, this would have the effect of further reducing the inflationary impact.

If the disturbance were real – for example, an increase in demand by Canadians for imported goods – the result would be an increased supply of Canadian dollars and a fall in the exchange rate. Again, there would be the inflationary impact of higher prices for imported goods. If the propensity to consume remained unchanged, however, there would be a decline in demand for domestic goods, which would be deflationary, and there would not be the added pressure from lower interest rates or increased money supply.

If the disturbance came from decreased export demand, resulting in a decreased demand for Canadian dollars and a fall in the exchange rate, again there would be the same inflationary impact from higher prices for imported goods. However, there would not be the inflationary pressure from lower interest rates or an increased money supply.

15 It is quite possible for Canada to have a lower inflation rate than the United States and, therefore, lower nominal interest rates.

16 An "optimum currency area" is a region (a nation or a group of nations) in which factors of production are sufficiently mobile geographically to permit economic adjustment to occur through factor mobility rather than changes in the exchange rates; thus a single currency is warranted in the region.

17 A. Lamfalussy, "What role for monetary policy today?" a presentation to the Conference on Monetary Conditions for Economic Recovery, Amsterdam, November 1984. A recent BIS study also stresses the growing financial integration between countries.

18 The controls on portfolio investment abroad obliged British residents to purchase foreign assets with investment currency. The control of direct investment was less onerous. It was recognized that direct investment is a complement to exports rather than a substitute for them. Initially, investment abroad by British residents had to be financed through foreign-currency borrowing; this requirement was gradually relaxed, however. The retention of profits abroad was also regulated. In the case of majority ownership by a British resident (individual or corporation), two-thirds of the earnings would have to be repatriated to the United Kingdom. In fact, considerably more than one-third of the earnings were reinvested abroad, because many investments did not involve a 51 per cent British interest. Finally, financing of third-country trade was limited – i.e., the financing with British pounds of trade between two countries other than the United Kingdom.

19 G. F. Boreham, "Current banking policy and practice in the United Kingdom, West Germany and Australia," Discussion Paper 62, Economic Council of Canada, Ottawa, September 1976.

20 Two main forms of controls were used – exceptionally high reserve requirements against the banks' foreign liabilities, and mandatory permission required for foreign borrowing by residents and for the purchase of most domestic securities by nonresidents. Capital controls were basically abandoned in 1975. They were temporarily reintroduced in January 1978 in the form of a 100 per cent reserve requirement against incremental foreign deposits and of a ban on the purchase by foreigners of West German securities with maturities between two and four years.

21 There is an asymmetry in people's behaviour with respect to the decision to bring capital into a country or to take it out. With respect to capital outflows, the investors will usually take every risk to get their money out. With respect to inflows, it is just a matter of increased relative profitability; if they are prevented from bringing in funds, the investors will just not do it.

22 The Bundesbank quotes two rates: the discount rate, and the normally higher Lombard rate. When the commercial banks have exhausted their discount quotas and require additional reserves, they can obtain Lombard loans – short-term loans against eligible securities deposited with the Bundesbank. The Lombard rate is usually 1 to 2 percentage points above the discount rate. When credit is being restricted, the Lombard rate is usually increased to a larger extent than the discount rate. Lombard loans are often the marginal source of commercial-bank refinancing and thus determine money market rates. The Bundesbank adjusts both the discount rate and the Lombard rate quite frequently, and at times restricts Lombard credit.

23 In econometric analyses of the determinant of the bond rate, the international impact comes out in every single equation with the same strength and is statistically significant. The long-term bond rate is a function of international factors but also of the money-market rates. In the short run, the domestic factors dominate; international factors enter into play in the longer run.

24 The Bank of Japan, *The Japanese Financial System* (Tokyo, 1978); and Organisation for Economic Co-operation and Development, *OECD Economic Surveys* (Paris, various years).

25 Rates on the newly developed government-bond market are completely free. Rates on large deposits at commercial banks are in the process of being deregulated. There is still a 15 per cent ceiling on the bank lending rate, but this ceiling is at present above the current lending rate. The deregulation of rates is a slow process, as it may endanger the financial stability of regional and local banks, particularly as it applies to smaller deposits.

26 Y. Suzuki, "Monetary policy in Japan: Transmission mechanism and effectiveness," *BOJ Monetary and Economic Studies* 2, no. 2 (December 1984):1-22.

27 *Politique de crédit et régulation monétaire*, Proceedings of a Conference on Credit Policy and Monetary Regulation, Banque de France, Cahiers Économiques et Monétaires, no. 18 (Paris, 1984).

28 At the short end of the market, the Banque de France determines interest rates with a maturity of less than six months – the so-called "taux directeur du marché monétaire." Many banks are always in a debt situation and continuously borrow from the Banque de France and other structural lenders, such as the Caisse des Dépôts et Consignations and the Crédit Agricole, at a predetermined rate. At the other end of the market, the financial rate is also, to a large extent, administered by the Banque. The treasury and the central bank play a large role in the pricing of primary issues. Rates on primary issues depend, however, on interest rates on the secondary market, which are free. To some extent, the secondary market rate is influenced by the Caisse des Dépôts et Consignations – a government organization controlling 20 per cent of that market. Many rates, which depend on the "taux directeur" and on the financial rate – for example, the deposit rates at banks or at the PTT (the Post Office) – are thus controlled *de facto* by the monetary authority. The lending rate by commercial banks depends on the "taux directeur" and thus is also regulated.

29 It used to be that allowed credit expansion in the system was predetermined by the Banque de France, with an allocation among different banks and different classes of credit. In the new system, there is a formula to calculate the new reserve requirements; beyond a certain growth in credits, the amount of reserve that banks have to put

aside increases exponentially. In calculating these required reserves special allowance is made for subsidized loans and credits funded by equity or by borrowed funds on the financial markets.

30 In Japan, the surge of inflation in the wake of the first oil price shock turned out to be a temporary and isolated occurrence.

31 An alternative approach, in the context of a policy of lowering domestic interest rates, would be to support the Canadian dollar through the selling of foreign exchange revenues. In such a scenario, there would not be the added inflationary pressure from a decline in exchange rates; however, there would still be inflationary pressure from the faster-increasing money supply. This would only be a temporary solution, as the holdings of foreign security reserves and international borrowing capacity are limited.

32 Lamfalussy, "Monetary policy today," p. 5.

33 ECC, *Intervention and Efficiency*.

34 If all interest were tax-deductible, the taxation system would be roughly equivalent, in terms of government revenue, to a system in which all interest payments were not taxable. Such a system would be equivalent to a consumption tax system in the following sense. Under a consumption tax system, only income used for consumption purposes is taxed, while savings are exempt. Since the present value of expected interest income on savings is equal to those savings, then, provided that marginal tax rates are not expected to vary over time, the expected present value of the interest income exemption is equal to the value of the exemption on the savings. Thus the deductibility of all interest payments is a roundabout way of moving to a consumption tax – with, however, a very different incidence of taxation.

CHAPTER 6

1 See ECC, *Steering the Course*, p. 56.

2 ECC, *Steering the Course*, p. 17.

3 IMF, *World Economic Outlook* (April 1985), pp. 163-71.

4 Colin Clark, "Is there a long cycle?", *Banca Nazionale del Lavoro Quarterly Review*, no. 150 (September 1984).

5 The age of the capital stock is also an important factor behind long-term movements in investment. Unfortunately, information on the age of equipment and machinery or buildings is not directly available in Canada.

6 See Maurice Lamontagne, *Business Cycles in Canada: The Postwar Experience and Policy Directions* (Toronto: Canadian Institute for Economic Policy, 1984), pp. 106-12.

7 Some authors view the factors just considered – i.e., movements in population, technological revolution, exploitation of natural resources, and consumer attitudes – as determining long-term waves or cycles in the economy and in investment; see, for example, Lamontagne, *Business Cycles*. The notion of a wave or cycle implies the succession, almost in regular fashion, of downward and upward movements. While some factors of a long-term nature may serve to explain the past performance of investment, they cannot necessarily be expected to be continuously at play in the future.

8 See Economic Council of Canada, *Western Transition* (Ottawa: Supply and Services Canada, 1984), pp. 149-50.

9 ECC, *Steering the Course*, Chapter 4.

10 R. W. Boadway and H. W. Kitchen, *Canadian Tax Policy* (Toronto: Canadian Tax Foundation, 1984), p. 129.

11 An elasticity of gross investment with respect to output that is greater than unity has been obtained by many economists before. An elasticity of 1.3 for output should therefore be viewed as no surprise.

12 While the Alsands project was dropped completely, the Cold Lake project was reduced in size and is now being operated in a series of smaller projects.

13 A. Divic, "Population, households and housing requirements: Projections for Canada, the provinces and the census metropolitan areas, 1976 to 2001," Canada Mortgage and Housing Corporation, Ottawa, November 1981.

CHAPTER 7

1 ECC, *Steering the Course*, p. 90.

2 M. Lalonde, *Working Paper on Social Security in Canada* (Ottawa: Government of Canada, April 1974).

3 Economic Council of Canada, *Newfoundland: From Dependency to Self-Reliance* (Ottawa: Supply and Services Canada, 1980); and ECC, *One in Three: Pensions for Canadians to 2030* (Ottawa: Supply and Services Canada, 1979).

4 ECC, *One in Three*, Chapters 9 and 10; and *Newfoundland*, Chapter 9.

5 W. Hettich and S. Winer, "Tax reform in an economic model of political choice," a paper prepared for the TRED conference on the political economy of tax change, Carleton University, Ottawa, August 1984.

6 R. D. Brown, "International tax planning," *Canadian Tax Journal* 32, no. 3 (May-June 1984):564.

7 ECC, *Steering the Course*, Chapter 5.

8 See Economic Council of Canada, *Financing Confederation: Today and Tomorrow* (Ottawa: Supply and Services Canada, 1982).

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Project Staff

Research

R. S. Preston, Director
G. Betcherman
B. J. Cain
K.E.A. deSilva
S. F. Gilby
J. Jobin
B. K. Lodh
K. McMullen
P. E. Nevin
K. Patterson
P. S. Rao
H. M. Saiyed
M. E. Willis

Advisors

R. A. Jenness
K. Newton
A. Ryba
D. Sewell

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